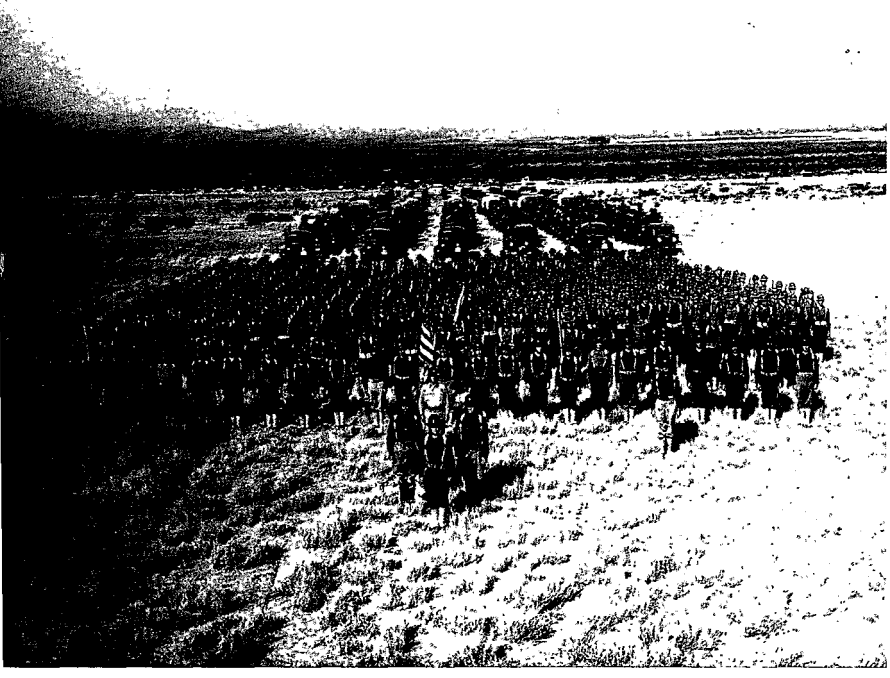
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COMMAND AND GENERAL STAFF SCHOOL

MILITARY REVIEW



March, 1940, Quarterly Review of Military Literature

VOL. XX, No. 76

12449

COMMAND AND GENERAL STAFF SCHOOL

FORT LEAVENWORTH, KANSAS

3 February 1940

TO: Editor, Command and General Staff School Military Review,
Command and General Staff School, Fort Leavenworth, Kansas.

On behalf of the 1939-1940 Regular Class, Command and General Staff School, it is desired to express the high regard we hold for the Command and General Staff School Military Review.

This publication has become unique in its field, being not only the expression of the sound tactical doctrines of the Command and General Staff School, but is perhaps the only complete and unbiased review of all military thought that is obtainable today. This is especially important in these times when many of the usual sources of accurate information are silent. However, today, more than ever before, important events are occurring and are being developed in the art of war.

It has become essential for most of us to reduce to a minimum the number of hours spent in keeping abreast of world-wide current events. Consequently, the current trend to Digests and Reviews is as much appreciated in military literature as in other subjects. It is apparent that the Military Review of the Command and General Staff School is today performing such a service with distinction. Concerning the article on the German campaign in Poland, December 1939 issue, the Foreign Editor of Newsweek recently wrote: "I consider this entire article one of the most excellent pieces of military writing on this war that I have seen."

We believe no serious military student can afford not to read carefully this invaluable publication. Specially do we commend it to all prospective students of the Command and General Staff School — the names of such a great number of the distinguished graduates of this School on the present subscription list are ample indication of their opinion and continued esteem

The cost of the subscription is still amazingly small, but that is due to the desire of the Commandant to make it available to all military students of our country and to advance knowledge of the military profession.

Multum in parvo should be its motto.

R. Townsend Heard

R. TOWNSEND HEARD,
Lieutenant Colonel, Field Artillery,
Class President.

Volume XX
1940

Number 76

COMMAND AND GENERAL STAFF SCHOOL

MILITARY REVIEW

QUARTERLY REVIEW OF MILITARY LITERATURE

LIEUTENANT COLONEL E. M. BENITEZ, *C. A. C., Editor*
MAJOR WILLIAM H. SPEIDEL, *Infantry, Assistant Editor*
CAPTAIN M. R. KAMMERER, *Infantry, Assistant Editor*

March, 1940

First Quarter

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Books

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Soldiers In The Sun—*By Captain William T. Sexton*

Perish By The Sword—*By Major R. Ernest Dupuy*

The Second World War; First Phase—*By Duff Cooper*

The British War Blue Book; Miscellaneous No. 9 (1939)—*Presented by the Secretary of State for Foreign Affairs to Parliament*

Can America Stay Neutral?—*By Allen W. Dulles and Hamilton Fish Armstrong*

Men In Battle—*By Alvah Bessie*

Les Enseignements Aeriens de la Guerre d'Espagne [Lessons Derived from Aerial Warfare in Spain]—*By Camille Rougeron*

Abraham Lincoln: The War Years—*By Carl Sandburg*

The Heritage of America—*Edited by Henry Steele Commager and Allan Nevins*

Keogh, Comanche and Custer—*By Edward S. Luce*

The Hundredth Year—*By Philip Guedalla*

If Not Victory—*By Frank O. Hough*

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Comments on the contents of the books listed here may be found on page 66 following.

Periodical
Section

Contents

PAGE

MODERN INFANTRY 5

MILITARY NEWS AROUND THE WORLD 19

THE SINO-JAPANESE WAR 32

THE EUROPEAN WARS 37

FOREIGN MILITARY DIGESTS 50

Digests of important articles from foreign military periodicals; the remaining articles for each magazine are listed.

Cooperation Between Infantry and Artillery 50

Defense of Infantry Units Against Air Attack 52

War in Its Reality and the General of the Future 55

Military Land Warfare 59

Defense Against Armored Vehicles 63

BOOK REVIEWS 66

LIBRARY BULLETIN 70

Books recently accessioned, which are of particular significance.

ACADEMIC NOTES, C. & G. S. S. 71

Current School material, which affects instructional procedure or tactical doctrines.

Notes on the Organization and Employment of Mechanized Cavalry 72

Map Problem and Discussion 80

Strategical and Tactical Mobility 88

DIRECTORY OF PERIODICALS 96

CATALOG OF SELECTED PERIODICAL ARTICLES 96

A systematic review of the contents of selected military periodicals. Foreign-language periodicals are digested to a degree to furnish an adequate idea of contents and significance.

READERS' GUIDE AND SUBJECT INDEX 120

All subject-headings are arranged in alphabetical sequence and can be consulted like a dictionary. Note also List of Periodicals Indexed and Key to Abbreviations.

Mission

The object of this publication is a systematic review of current military literature, through cataloging articles of professional value, in selected military and naval periodicals, in the domestic and foreign field.

Articles from foreign periodicals are treated by translations of titles and digests of contents; material of particular importance is covered more extensively in a section of "Foreign Military Digests."

A "Library Bulletin" Section lists books, recently accessioned, which are of particular significance.

This *Review* is published as a guide to modern military tendencies and to inspire vigorous thoughts on the subjects treated.

The opinions expressed and conclusions drawn in articles are *solely those of the authors and are in no sense official.*

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Acknowledgment

The editors desire to express their thanks and appreciation to the many persons who have valuably assisted in the preparation of material for this issue. The work of contributors has been done in addition to their regular duties and on their own time. We are very grateful to the following officers for their generous donations:

LIEUTENANT COLONEL H. E. DAGER: Modern Infantry

LIEUTENANT J. DASHER: *Krasnaya Zvyezda* (26 August-28 October 1939)

CAPTAIN H. D. KEHM: *Militarwissenschaftliche Rundschau* (January, March 1939)

CAPTAIN A. L. KEYES: *Revue d'Artillerie* (April, May 1939); *Revue Militaire Suisse* (July, August, September 1939); Book Review

CAPTAIN W. E. LORENCE: *Bulletin Belge des Sciences Militaires* (July, August 1939)

MAJOR T. R. PHILLIPS: *La France Militaire* (11 July, 7, 17 October 1939); Book Review

MAJOR R. S. RAMEY: Notes on the Organization and Employment of Mechanized Cavalry; Strategical and Tactical Mobility

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The Cover

9th Infantry Combat Team.

Photograph by J. J. Gregor, Fort Bliss, Texas.

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PART V

The U. S. Infantry and Cavalry School now was ready for someone to visualize its larger instructional possibilities and to give it a considerable impetus. That impetus was to come largely from the mind of one of its instructors. First mention is made of this officer in Colonel E. F. Townsend's report of 1892, which says:

"Captain A. L. Wagner, 6th Infantry, one of the assistant instructors of this department is now at Cumberland, Md., by authority of the War Department, engaged in preparing a work on the subject of 'Minor Tactics,' for the use of the school and army. It is hoped that this will be ready to put in the hands of the next class."

The annual report of 1893 records the development of Wagner's influence in the school as follows:

"The Department of Military Art during the past year has been in charge of Captain A. L. Wagner, 6th Infantry. Captain Wagner has brought untiring zeal to the accomplishment of the work in his department and with the help of his able assistant instructors has been remarkably successful in the instruction of the class. The works of which he is the author, *viz* 'Service of Security and Information,' and 'Organization and Tactics,' have been used as the text books of the course, supplemented by a small portion of 'Home's Precis of Modern Tactics.' This book will be dropped as soon as Captain Wagner's work is entirely completed."

Prior to 1891, nearly all of the textbooks used at the school were written by officers of foreign armies. The first text prepared at the school was written by First Lieutenant J. B. Batchelor, Jr., 24th Infantry, on *Infantry Fire—Its Use In Battle* which superseded *Infantry Fire Tactics* by Captain C. B. Mayne of the British Army. It was followed by Captain Wagner's two textbooks mentioned above. The next text was a work on *Field Engineering* prepared in the Department of Engineering under the direction of Captain W. D. Beach, 3d Cavalry. Captain W. H. Carter's work on *Hippology* soon replaced *Horses and Stables* by Lieutenant General Sir F. Fitzwygram of the British Army and *Seats and Saddles and Bits and Bitting* by Major Francis Dwyer of the Austrian Army. Soon practically all of the books used in the school were American publications. The school soon developed and has since maintained an international reputation for the excellence of its military publications.

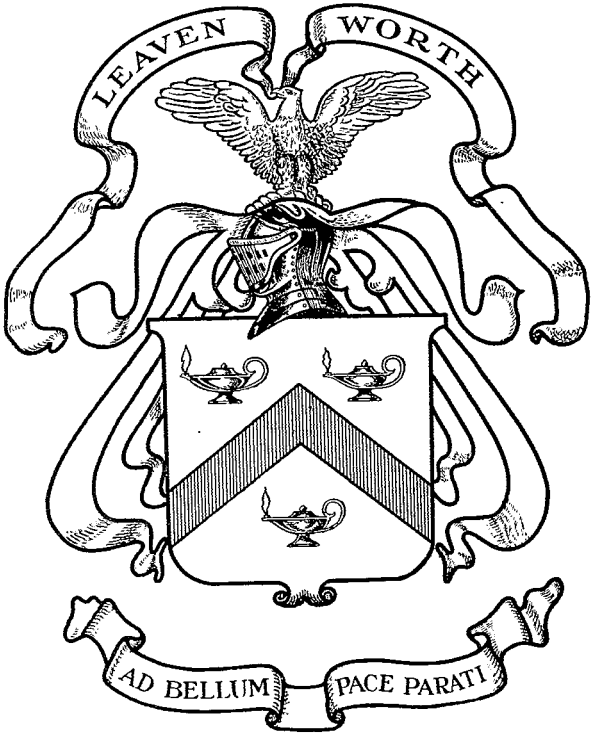
Captain Wagner continued at the head of the Department of Military Art until March, 1897. In that year the results of his four years of instruction work was embodied in the revision of the course of instruction published in General Orders No. 49, War Department, 1897.

The Spanish-American War and the Philippine Insurrection caused a four-year cessation of systematic education of the Army. However, the war furnished much opportunity for consideration of the requirements of such a system of education and it was fortunate that at its close, the problem came to as great and capable a man as Secretary of War Elihu Root. With the assistance of military advisers, conspicuous among whom were Brigadier General William H. Carter and Brigadier General J. Franklin Bell, Mr. Root analyzed the military educational needs of the Army.

As a result of the study given to the requirements of military education, a general scheme of instruction was adopted for the Army and published in General Orders No. 155, War Department, 1901. This scheme provided that much of the preliminary instruction which formerly had been included in the Fort Leavenworth curriculum should now be included in systematically organized and efficiently conducted post schools. The next step in the education of officers of all branches exhibiting superior merit in the post schools was to be attendance at the Fort Leavenworth school which was to be enlarged and developed along the lines of a post-graduate college under the designation, "The General Service and Staff College." The final step in the school instruction of selected officers was also provided for in these general orders which required the college staff, upon conclusion of the annual examinations, to recommend such *student officers as had especially distinguished themselves*, for further instruction at the Army War College which had been established in Washington, D. C.

The regulations for The General Service and Staff College, together with a suitable program of instruction, was published in General Orders No. 89, War Department, August 1, 1902. A one-year course of instruction was provided for. The College reopened as directed, the new class numbering twenty-nine cavalry and sixty-four infantry officers. The student rank continued to be that of lieutenant and it was not until 1907 that it was raised to captain.

(To be continued)


LEAVEN
WORTH
AD BELLUM
PACE PARATI



RECONNAISSANCE CARS PRECEDING A MOTORIZED INFANTRY DIVISION ON THE MARCH *Wide World Photo*

Modern Infantry

BY LIEUTENANT COLONEL H. E. DAGER, *Infantry*

THE ROLE OF INFANTRY

The role of infantry has always been to take and hold ground. Has this role changed? Have modernization, motorization, mechanization and reorganization altered infantry's mission? Do new armament, new organization and gasolined stream-lining bring with them new infantry tactics?

How does the new element of speed affect command and staff procedure? What must infantry officers extract as guiding principles from the effervescent mass of tables, reports of tests, "lightning wars," and enlightening comment in which we are submerged?

WORLD WAR INFANTRY

The four years of World War, 1914-1918, furnished infantry tacticians with a proving ground for their ideas. Massed formations, special-weapon groups, individual and small-group infiltration, battering-ram formations in narrow zones; these were ideas which resulted in heavy infantry casualties.

The prevailing concept of infantry organization, armament and tactics was brutal. The value of the individual soldier in combat was obliterated by the glitter of "massed men and massed fires" intended to blast a path through a similar group of massed men and massed fires. Like rolling



1ST DIVISION INFANTRY GOING "OVER THE TOP" AT CANTIGNY, FRANCE, 28 MAY 1918 *Wide World Photo*

sheets of molten lava they met, they fused, and destroyed each other by their heat.

Shifts from mass to line, to column, to group, to combinations of men and weapon, produced similar destructive results. Infantry failed to come up to expectations in the last World War. And, because it was the principal arm with the principal role of taking and holding ground, its supporting arms and services were also a disappointment. The arch was no better than its keystone.

WHY INFANTRY FAILED

Why did infantry fail to live up to expectations? Mainly because the support given to it was not an integrated part of its basic battle unit—the infantry battalion. With the exception of rifles, automatic rifles and grenades, the battalion had nothing of its own with which to overcome resistances within and behind the hostile main lines of resistance. Furthermore, infantry in the World War was essentially a flat-trajectory arm. True, the battalion received high-angle fire support of a limited number of mortars and of artillery howitzers, but this support also failed to cope with the problems of mobility, liaison, and communications. The battalion, as organically constituted and armed, was dependent upon weapons other than its own for maintenance of its velocity. Once beyond range of supporting high-angle weapons it no longer had the means to contend with targets concealed, defiladed, or protected by defensive organization of the ground. Having reached those hostile main lines, it was stopped. It lost contact with its supporting weapons most of which were under the command (direct or indirect) of higher commanders. The desire to support was there, but the mobility, communications, and liaison vital to continued support were not. Maintenance of initial velocity was impracticable. The defensive power of automatic weapon fire was at its zenith, and it took its toll.

WORLD WAR MANEUVER

The typical scheme of maneuver provided for a combination of fire and movement. It was a good scheme; it still is, and it probably always will be. Why did it fail in the last World War? Simply because, in application, fire failed to keep up with maneuver. Infantry was tied down to a time-schedule of fires without which it lacked the power to advance. It reached a limited objective, which in turn was

limited in depth by the average range of the mass of supporting fires. On the objective infantry halted, reorganized, marked time, and was finally ejected by hostile reserves who promptly took advantage of the lull in the attacker's protecting fires to do so. The defender planned it that way.

Maneuver, in its proper sense, was almost unknown. A true envelopment occurred only when a section, squad, or individual soldier became thoroughly disgusted with the constant failure and casualties incident to frontal attacks and "stalked" a machine-gun nest. Such action drew well deserved commendation. But it failed to indicate to the high command that a few infantrymen with simple weapons plus maneuver space and leadership, could accomplish what the impressive mass could not do.

Maneuver based upon the forward displacement of relatively immobile supporting weapons necessitated constant alignment to avoid the dangerous salient. Alignment, in turn, left infantry no choice of protecting terrain, and constantly exposed it to losses that it could have avoided. There is nothing simpler to smother or enfilade, than an alignment.

Maneuver of masses of infantry in peace-time is difficult. Under the concentrated gun and machine-gun fires of the World War it was impossible. The *masses broke; mass-leaders* became mere file-closers and the unit went forward —if it did not melt—under the leadership of platoon, section, and squad leaders. The well-planned "power-punch" of the large unit became a series of "dog fights" all along the line. Direction, control and coordination passed out of the picture. The only immediate result was casualties.

Experimentation

Twenty years of corrective experimentation began 11 November 1918. The latest crucible now rests over the slowly rising flame of the present war in Europe. It has been preceded by lesser tests, notably the invasion of China by Japan and the Civil War in Spain; but modern organization and equipment enters into those pictures to such a limited extent that the proponent or opponent of any particular weapon or tactical method could pick dates, areas, and results sufficient to prove his case, verbally at least.

The result of these years of experimentation, together with the modernization of weapons, mounts, and transportation has been a new organization of the infantry division in the army of nearly every nation. Each is the approved solution which will take the next war out into the "fresh-air-and-sunshine" of open warfare. In some cases the throes of military evolution have closely approached revolution. But, as Major General George A. Lynch, Chief of Infantry, stated on 14 March 1939—"We seem to be approaching the culmination of changes in armament, organization, and tactics that prelude transformations in warfare equalling in scope those introduced by the invention of gunpowder and the development of the musket and cannon. . . . Will gasoline now take over the position of primacy in military evolution and restore to mobility the decisive influence which it once had over the issue of battle?"

In a recent comment on revision of our Field Service Regulations, General George C. Marshall, Chief of Staff, stated: "In going over the Field Service Regulations the other day prior to giving it tentative approval, a few points came to mind which I think might well be included in the next edition.

"There should be a paragraph on continuity of effort. The initial impetus is seldom conclusive in effect, and final success will only be secured by maintaining the momentum once gained. Many factors enter into this, even the stabilizing effect of too early establishment of a complete command post. . . ."

Experimentation has, then, been aimed at what? We believe the true objective of it all—no matter what the weapon, or type or size of unit—has been the restoration of *battlefield mobility* and, as a proper prelude in preparation for battle, there has been extensive and successful experimentation in the field of strategic mobility—the movement of arms and troops to the battlefield. There has been a definite speeding up and whittling down—up in movement and down in size.

A New United States Infantry

We have a new infantry. As a result of the lessons learned in the World War and of the experiments conducted in the intervening period, it is new in concept, new in organization, new in armament and new in tactics. Let us spend a few minutes on each item and see if we can grasp the *essential differences.*

CONCEPT: In our Field Manual 100-5 (FSR), we find these statements:

"The infantry is charged with the principal mission in battle. It is essentially the arm of close combat. . . . Infantry is capable of independent action through the employment of its own weapons. . . .

"Infantry can move in all kinds of terrain; its operative mobility can be greatly increased by the use of motor transport. . . . In both attack and defense, it can utilize the terrain so as to develop fully its own fire power and minimize the effect of hostile fire. . . . Its combat power rests primarily on the morale and fighting ability of the individual soldier and the leadership of its subordinate commanders."

There are old as well as new concepts of infantry discernible in these statements. Infantry still has the principal mission in battle and it still is the arm of close combat. However, with the new organization, armament, and tactics which will be discussed below, we now develop those powers inherent in infantry which will enable it to accomplish that principal mission and close with the enemy.

Infantry has been capable of "independent action," but the action, as demonstrated in the World War usually resulted in complete stoppage in front of hostile resistances which infantry, almost completely dependent on other arms, could not overcome. The difference in concept here, lies in "the employment of its own weapons."

That "its operative mobility can be greatly increased by the use of motor transport" implies both strategic mobility to the battlefield and tactical mobility (mainly of weapon and ammunition) on the battlefield. Here, then, is the difference: provisions are made for conserving the strength of the individual soldier, for "getting him thar fustest in the bestest condition," for feeding him, supplying

him with ammunition and for evacuating him while he is fighting—by motors.

"In both attack and defense it can utilize the terrain so as to develop fully its own fire power and minimize the effect of hostile fire." This statement encourages us to release infantry from phase-lines upon which it used to stop (to be shelled and ejected) and permit it to utilize terrain and to develop fire power (bases of fire) and seek cover regardless of alignments. Veterans of the World War (1914-18) are deeply appreciative of the last concession. It is a healthy difference, and it is tactically sound.

Even more sound is the importance given in this Field Service Regulation to the single solitary soldier, who, at last, after twenty years, comes in for his share of glory. Infantry's "combat power rests primarily on the morale and fighting ability of the individual soldier and the leadership of its subordinate commanders." This last concept, is, in my opinion, the basic concept responsible for the essential differences of them all. There is nothing in any of the others that exceeds or even equals this in importance.

ORGANIZATION: We have new tables of organization for the infantry that are available to our readers. Their vitalizing effects on infantry are a matter of great interest to all. Since reorganization has been based upon a consideration of our most valuable asset—the individual, pugnacious, infantryman—we shall work up briefly from him to his Colonel.

In what way have we improved the lot of the soldier?

To begin with we have boosted his morale. Motors will relieve him of the constant foot-slogging. He will be in better physical condition and, therefore, more content to fight if, in the interim, he can "march sitting down" and dispense with the hob-nail express. He no longer staggers under a sixty-eight pound load, much of which he ditched anyway in the World War—and would again if he had it to carry. He wears loose-fitting clothing—no more choker collars and constricting wrapped leggings. He looks at ease, and he is at ease. In the war-strength squad, he is one of twelve comrades. His squad leader now is a sergeant who, assisted by the usual corporal, looks after him and leads him in battle. It will take a lot of casualties to cut "his gang" down to the point of absorption by another unit. He, like every other member of his squad, is armed with the new Garand .30 caliber semi-automatic shoulder rifle This weapon is just as accurate as the 1903 Springfield; it has a maximum sustained rate of thirty aimed shots per minute, and its recoil, compared to that of our old rifle, is much less severe Speaking of the Garand rifle, the Chief of Infantry states: "The semi-automatic rifle restores the infantry soldier's individuality It gives the infantry squad a fire power equal to or greater than that of any other army. At the same time it releases the soldier from bondage to the machine. It makes him again a fighting man." To this rifle is attached a one-pound bayonet, training in the use of which has to a certain extent been suspended. It should not serve merely as an excellent can-opener; it has combat value which requires a bit of resuscitation. Our doughboy has been cut loose from the task of inching forward on his back or stomach, dragging a bipod, tripod, base-plate or gadget belonging to some heavy weapon. Nor is he any longer the "ammunition mule" for an automatic rifleman or other specialist in his squad. There are no specialists in his squad. It is just a plain, honest group of twelve equally armed combatants, intent upon one thing —advancing the attack. It is essentially an organization based upon mobility and morale. It has but two functions; to defend itself as a group, and get itself forward as a group.

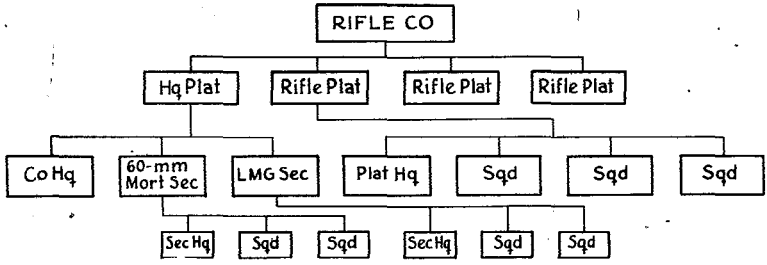
The rifle platoon is composed of three such squads, plus a platoon headquarters consisting of a lieutenant, two sergeants (platoon guides) and a private (messenger). Since it also is essentially a front-line unit, it contains no special weapons. Except for the one officer armed with a pistol, it is, like the squad, uniformly armed with the Garand semi-automatic shoulder rifle. Thus armed, and supplemented by the occasional use of grenades, the platoon has all the means necessary for carrying out the infantryman's traditional mission of close combat. Any special weapon assigned to the rifle platoon such as a mortar, light or heavy machine gun, or heavy automatic rifle would require one or both of two things. Either active front-line riflemen would become "substitute gunners and ammunition carriers" or the size and ammunition requirements of the weapon would demand emplacement and operating or servicing personnel in an area so far to the rear as to be beyond the supervision of a front-line platoon commander. Since the squad has been very intentionally and definitely set free from ball-and-chain weapons, there appears to be no logic in nullifying the mobility gained by tying down a unit composed of three squads and organized for the specific purpose of front-line fire and movement.

We now move up to the rifle company. Again we quote from the Chief of Infantry's remarks of 14 March 1939: "The greatest change in the character of the units of the new organization has taken place in the rifle company. The commander of this unit, who formerly had only to deal with several homogeneous platoons and who, when he had committed these to action, had practically finished his mission for the time being, now has the means of giving continuous support to his attacking platoons."



USA Signal Corps.

60-MM MORTAR SQUAD



The rifle company is composed of a headquarters platoon and three rifle platoons.

The headquarters platoon includes the company headquarters, a 60-mm mortar section and a light machine-gun section. In the company headquarters there are a captain (commanding the company), two lieutenants (one second-in command and the other for the mortar and light machine-gun sections), one first sergeant, three sergeants (communication, mess, supply), one corporal (clerk) and eleven privates.

In the 60-mm mortar section, headquarters of which consists of a section sergeant and two privates (chauffeur and messenger), there are two mortar squads. Each squad has a corporal (gunner) and four privates (one assistant gunner and three ammunition carriers). All the members of this section, except the chauffeur and messenger, are armed with the pistol. Normally each squad operates one mortar, although a third mortar is prescribed for the section for use in defensive situations. A ½-ton truck is assigned to this section as carrier for weapons and ammunition.

Since we have here introduced a new infantry weapon we will describe it briefly.



60-MM MORTAR

USA Signal Corps

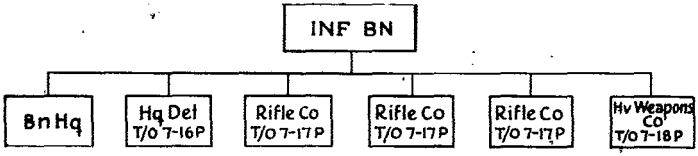
It weighs approximately 51 pounds. It can be broken down into two loads, the tube and bipod weighing 28 pounds, the base-plate and accessories 23 pounds. Shells weigh from 3 to 3½ pounds each. Each ammunition carrier (3 to a squad) carries 10 rounds. The maximum range of this mortar is 1,800 yards, therefore it is neither necessary nor desirable to emplace it in or very close to an assault echelon. It is one of the means given to a company commander to maintain the initial velocity of his platoons. It is an effective high-angle weapon for dealing immediately with concealed or defiladed resistances which cannot be reached with the flat-trajectory rifle or machine gun.

The light machine-gun section is composed of a section headquarters (one sergeant and one private, messenger) and two light machine-gun squads.

The light machine-gun squad has a corporal (squad leader), two gunners, two assistant gunners, and two ammunition carriers. Each light machine-gun squad operates two light machine guns (total, four for the section). All but the gunners are armed with the pistol. A new light machine gun has not yet been standardized. However, our Tables of Organization list as a temporary substitute, the Browning Automatic Rifle, caliber .30, modified. It is an air-cooled, gas-operated, magazine-fed, shoulder weapon. As modified with hinged butt-plate, bipod, new stock, and new sights, it weighs about 20 pounds. Its effective use when fired automatically has been increased by reduction of the cyclic rate from 600 to 300 rounds per minute.

This is the second means given the company commander for maintaining the initial velocity of his platoons. He can send in these light machine guns behind an advanced platoon to enfilade resistances holding up the rear platoons. He can employ them in gaps between platoons. He can employ them in the zones of adjacent companies more advanced than his own to assist his own. He can assist by fire the adjacent companies and receive cooperative fires from them more rapidly and effectively than has been our experience in the past. He now has something in his own hands with which to influence company combat. A vast difference, and improvement over the usual "request for fires" so typical of the World War of 1914-1918.

Our war strength rifle company then, to sum up, consists of the headquarters platoon of 3 officers and 45 men, and three rifle platoons each of one officer and 39 men, making a grand total for the company of 6 officers and 162 men. The peace strength organization of 4 officers and 114 men permits of ready expansion to these war strength totals.



The basic battle units of infantry are battalions. They are the tactical units of the regiment, the yardstick of a division commander, and the barometer of divisional combat-power to a corps commander In the number, condition, and disposition of infantry battalions, hostile and friendly, rests a basis of estimate, decision, plan, order, and execution. In and around the infantry battalion are found the means, organic and supporting, for the application of the speculative idea (the scheme of maneuver) to the terrain.

It consists of a headquarters of 3 officers, a headquarters detachment of 43 enlisted men, three rifle companies, and a heavy weapons company of 6 officers and 143 enlisted men. Total for the battalion at war strength is 27 officers and 672 enlisted men. The battalion commander has available one light passenger car and two motorcycles with sidecars.

The heavy weapons company is a new and notable feature of the infantry battalion Its heavy weapons are the .30 caliber machine gun (8 offensive, 16 defensive, machine guns), the .50 caliber machine gun (2 machine guns) and the 81-mm mortar (2 mortars)

At war strength it consists of a company headquarters of 2 officers and 21 enlisted men, two caliber .30 machine-gun platoons, one caliber .50 machine-gun platoon and one 81-mm mortar platoon. The number of weapons remains the same, at peace strength Company headquarters has one light 5-passenger car, and two motorcycles with side cars. Each platoon headquarters has one light 5-passenger car.

Each of the two caliber .30 machine-gun platoons consists of a platoon headquarters of one officer and seven enlisted men, and two sections of two squads each. In addition to the 5-passenger car, each platoon has one 1½-ton pick-up truck per squad, four per platoon, or a total of eight for the two caliber .30 machine-gun platoons in the company.

The caliber .30 machine-gun section consists of a section headquarters (sergeant, section leader) and two squads (total 17).

The caliber .30 machine-gun squad consists of a corporal (squad leader) four ammunition and water carriers, one chauffeur, one gunner and one assistant gunner (total 8). Each squad has two caliber .30 machine guns but only one of these guns is used in the offense Both are used in the defense

The machine gun is the Browning heavy machine gun, caliber .30, Model 1917, with which we are all familiar. It is an automatic, recoil operated, belt fed, water-cooled weapon with a maximum rate of fire of 525 rounds per minute, and a sustained rate of 125 rounds per minute. It has a firm tripod mount, and delivers effective bursts over small areas. For observed fire its effective range is 1,800 yards, which is the limit of satisfactory observation by eye, under favorable conditions. It may be used for effective indirect fire at ranges up to 4,000 yards.

These heavy machine guns are one of three means given the battalion commander to maintain the velocity of his battalion in attack and to protect it, both in attack and in defense Since light machine guns are included in the company echelon, this heavier gun is no longer necessary with front-line mobile units It is by its characteristics more suited for long-range fires, antiaircraft fire, flank protection and the final protective liner of the defense. Its weight with ammunition, water and accessories requires transport of gun and crew in the ammunition and weapon carrier (truck) of the squad, which is used to move it as close to the battalion base of fire as conditions will permit. From this point to emplacement, it can be broken down to loads within reasonable limits of man-handling for several hundred yards.

The caliber .50 machine-gun platoon consists of a platoon headquarters of one officer, one platoon sergeant, one agent and instrument corporal, one chauffeur, one messenger, and two squads.

The caliber .50 machine-gun squad consists of one corporal (squad leader), four ammunition and water carriers, one chauffeur, one gunner and one assistant gunner. The squad has one gun, machine, Browning, caliber, .50, M 2, flexible, and one carrier, weapon and ammunition (truck). The total strength of the platoon headquarters and two squads is one officer and twenty enlisted men.

The Browning machine gun, caliber .50, M 2, flexible, has an effective range of 6,000 yards against personnel. Stepped up to a velocity of 3,300 feet per second at the muzzle, it penetrates one inch of American armor (or 1½-inch foreign tank armor-plate) at 100 yards. It is included in the heavy weapons company of the battalion primarily to provide a forward echelon antitank weapon. It will be of additional emergency value when employed against located, protected machine guns. It is another one of the three means given the battalion commander to maintain velocity in attack, and to protect the companies from mechanized attack.

The 81-mm mortar platoon consists of a platoon headquarters of one officer, one platoon sergeant, one agent and instrument corporal, one chauffeur, one messenger and two squads.

The 81-mm mortar squad consists of a corporal (squad leader), four ammunition and water carriers, one chauffeur, one gunner and one assistant gunner. The squad has one mortar, 81-mm, and one carrier, weapon and ammunition (truck). The total strength of the platoon headquarters and two squads is one officer and twenty enlisted men.

The 81-mm mortar is the third of the three means of combat power included in the infantry battalion. Major General Lynch, Chief of Infantry, stresses the inclusion of this mortar in the battalion as follows: "Since the 81-mm

mortar is habitually required by the battalion for the execution of its missions, it seems clear that it should be a permanent part of the battalion. It is the battalion commander's most powerful means of supporting his attack in rapidly moving situations and where liaison with the artillery has broken down."



U.S.A. Signal Corps

MAN-TRANSPORT OF 81-MM MORTAR

Before progressing further, it might be well to summarize what has been done within our basic battle unit, the battalion, and see what effects have resulted from the changes in its organization, equipment and armament. Let us see if this new battalion is a solution to the Chief of Infantry's request for "elbow room, to give our units elbow space, to exploit a local success and give full play to the leadership of all grades"?

(1) *The individual soldier.*—We have lightened his load We have clothed, equipped, and armed him as a fighting man, no longer an adjunct to a special weapon. We have unleashed him from his bondage to the machine. We have bound him, in the squad, to a group of 12, which only 50 per cent casualties can disrupt. We have made him the standard of mobility and combat power of the front-line unit We have charged him with what, in combat, we have always found in the individual American soldier—initiative, cooperative ability, fortitude.

(2) *The squad* is no longer subject to that disruption so prevalent in the eight-man squad of the World War. We have added a sergeant for the initiation and maintenance of squad leadership. We have steadfastly denied the contention of foreign armies that the power of the squad rests in squad-serviced weapons. We adhere to an American concept of combat—that our American soldier can "take it" if we provide him with the arms and mobility to "give it." So long as he feels that he is a potent factor in squad combat, that he is an individual combatant, he is proud of what he can do. He stands or falls, and accepts the result, on what he and his eleven comrades can or cannot do. It is his, and their, problem, and he wants to help solve it. Tie him down as "fifth wheel" to a machine and he loses interest—definitely and disastrously. He resents the delay, the inaction, and inertia incident to planning, ordering and executing the complicated maneuver based upon a machine which he only serves but cannot control.

(3) *The platoon* is now organized as it should be —a mobile front-line unit, freed from that which impedes a front-line echelon—a heavy weapon. It is essentially a unit of mobile, maneuvering squads. It contains three squads for the application of the principles of fire and movement by formations in line, column, or echelon. The platoon contains no special weapons, contributes no personnel to machine-servicing functions and is, in concept and fact, a unit freed from the undesirable influence of weapon specialism and its attendant delays of estimate of, request for, and application of, special weapon support. It is the smallest unit commanded by a commissioned officer. The personal contact made possible by its size (1 officer, 5 sergeants, 3 corporals and 31 privates), establishes and assures sympathetic connection between the commissioned chain of command and its enlisted personnel, productive of understanding, cohesion, cooperation, and morale.

(4) Our new *rifle company* organization introduces the first and lightest of the infantry special weapons, the 60-mm mortars and the light machine guns In the headquarters platoon we find enlisted personnel and weapon carriers adequate for maintenance, transportation, and conduct of fire of these new weapons. With a small but adequate company command group of officers and noncommissioned officers, we provide control. This group can concentrate on the conduct of operations to the exclusion of all else.

Our company commander is at last out of the command post, off the telephone, and into the fight, where he should be, with a powerful weapon in each hand. He can influence the action of his own platoons, and assist, by means of his light weapons, the actions of an adjacent company. He, in turn, can expect similar assistance from the companies on his flanks.

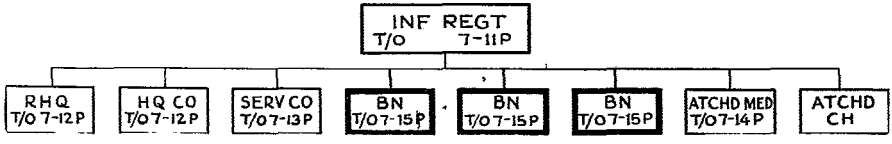
Control of three mobile platoons, and coordination of the supporting fires of company mortar and light machine-gun sections will require that the company commander be at all times in the forward area of battle. His will be a moving command post, and never a fixed command post. These new platoons and new weapons can neither be directed nor coordinated by a commander who sits—anywhere.

(5) *The battalion.*—We are back once more to summarize the basic battle unit. In the World War, and in the twenty years since, this unit gathered considerable moss, which the new battalion definitely sheds. Many of us can remember the days during the World War when we wrote a several page order for a battalion attack. And we find battalion commanders today whose pencils are the important item of their equipment. We must now discard one of two things—either the pencil, or the battalion. This new battalion is also built for speed—speed of entry into battle and velocity during battle. Everything tending to slow up this entry, or this forward impetus has been eliminated. In terms of mobility the "heavy weapons company" is definitely not heavy. It, too, moves weapon and crew within reasonable distances of emplacements. Why should such mobility be tied down to a phlegmatic office-and-paper procedure such as we experienced in the World War, and have even taught in service schools until very, very recently? Battalion lead-

ership must change. This commander may have a command post and a telephone, but, if found during action in physical contact with either of them for over three minutes at a time, he should be "canned" and the telephone orderly or battalion runner whose job he has usurped, put in his place. The idea we set forth here is, that now, more than ever before, will these new mobile units require the actual presence of active directing minds with them, not behind them; to provide control, advice, support, assistance, and that virile direction which is the only thing that works beyond the line of departure.

With a headquarters and headquarters detachment, three rifle companies and a heavy weapons company, all built for mobility with fire power, the new infantry battalion steps out of its hobble-skirts and becomes in reality a "King of Battles" instead of a gentle "Queen."

Because it still is the basic battle unit, the measure of power, and the framework upon which scheme of maneuver is built, it is evident that here in the battalion we have made changes affecting the combat power, battle-life, mobility and tactics of all units from battalion to army corps. No matter what size the unit, infantry operations of all types depend upon battalion efficiency and culminate in the solution of battalion problems.



With so many constant proposals for change in organization it is a pleasure to find that our next higher echelon, the infantry regiment, has come safely through the maelstrom of ideas and tests, and is capable of being included, as now organized by War Department Tables of Organization No. 7-11 dated 1 January 1939, in whatever type infantry division formed—square, with brigade headquarters, or triangular, without. This fact alone reflects great credit upon those responsible for its development and is indicative of sound basic design which permits its inclusion, without change, in either type division.

With the recent consolidation of regimental bands to form divisional or station bands, the infantry regiment now has a war strength of 103 officers and 2,302 enlisted men. These figures include the personnel of regimental headquarters (5 officers), headquarters company (8 officers and 176 enlisted men), service company (9 officers and 110 enlisted men), and the three infantry battalions.

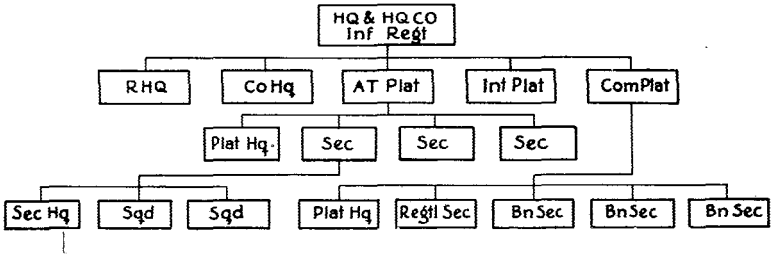
These three battalions must be fed three times a day, supplied with ammunition, commanded, communicated with at all times, protected from tank or mechanized attack, and occasionally bandaged up and evacuated. Except for these latter two tasks, which would be handled by attached medical personnel, all the rest are the responsibilities of the colonel, assisted by his small staff and the two overhead units—headquarters company and service company.

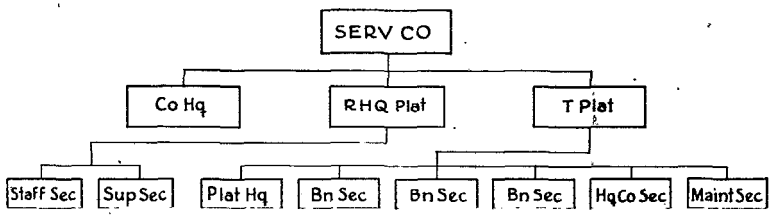
Headquarters company, completely motorized, contains the intelligence platoon, the antitank platoon and communication platoon for the purposes implied. In the antitank platoon, besides platoon headquarters, there are three sections of two guns (and squads) each, an organization suitable for attachment of a gun section to each infantry battalion should such a disposition of weapons be appropriate. These are the only organic crew-weapons actually under command of the colonel. These are far too few, in the opinion of many, but there they are, and "a bird in the hand" applies. If and when we include more of such guns, we can expand our antitank theory and practice to the extent of our gain. Perhaps ingenuity in employment of six may enhance our ability to handle eighteen? Let's watch the current maneuvers!

Similarly, in the communication platoon we find a platoon headquarters, a regimental section, and three battalion sections, all sections joining and providing communications to and for the echelon indicated, as soon as the need for same is foreseen.

The intelligence platoon of ten enlisted men operates to collect and disseminate information as directed by the regimental S-2.

The service company of the infantry regiment consists of a company headquarters, regimental headquarters platoon (two sections; staff and supply), and a transportation platoon consisting of a platoon headquarters, headquarters





company section, maintenance section, and three battalion sections.

The two sections of headquarters platoon as their titles indicate, furnish personnel to plan and conduct the necessary staff and administrative work, and solve the vital and ever-present problems of supply.

The transportation platoon does just that—it moves everything up and brings anything back, "dead or alive." Its sections serve the units indicated by their title during movement, in bivouac or in battle, and furnish the vehicles which serve to discharge the regimental commander's new direct responsibility—the constant supply and replenishment of rations, gasoline and oil, ammunition and other classes of property. The infantry regiment now has the means, and must use them, to carry these supplies, to go back and bring up more.

The maintenance section of the transportation platoon (13 men) provides mechanic-chauffeurs and mobile repair crews for limited repair and maintenance of the organic vehicles of the regiment.

In the square (4-regiment) division, the regiment operates under a brigade commander. In the triangular division it operates directly under the division commander, with no intermediate link in the chain of command.

In either type division, square or triangular, in the future we will find the infantry regiment habitually living, serving, and fighting, as a co-partner in a combat team composed of an infantry regiment and an artillery gun battalion. This association, which we hope may later expand to include peace-time garrisoning together, is but simple acceptance of the fact that infantry and artillery must work in close contact. Otherwise the quasi-separate bodies will undergo inevitable strain and possibly disastrous rupture through lack of coordination and cooperation.

Corps and Divisions

We have indicated that up to and including the regiment, our new infantry is fixed; that the type of division into which it is welded has no effect upon its organization, armament or equipment.

The accompanying functional chart of the new triangular division shows clearly and effectively its organization and operation. We have reason to believe that a type of army corps may also shortly appear in tables of organization. The tentative tables show one triangular and two square infantry divisions as the normal corps infantry complement. But it is neither improbable nor impracticable that a corps organization of all square, or all triangular divisions may later receive favorable attention as a result of actual corps tests in the last series of the current maneuvers. (See Chart, page 14.)

In the triangular division, the short chain of command—division commander dealing directly with infantry and artillery regimental commanders—has, in the Provisional Infantry Division test and the Provisional 2d Division test, produced more favorable than unfavorable comment. Where, however, attempt was made to inject the services of the Infantry Section Brigadier or Artillery Section Brigadier either in a command or in a staff capacity, the operations of the division were retarded, rather than expedited.

New Infantry Tactics

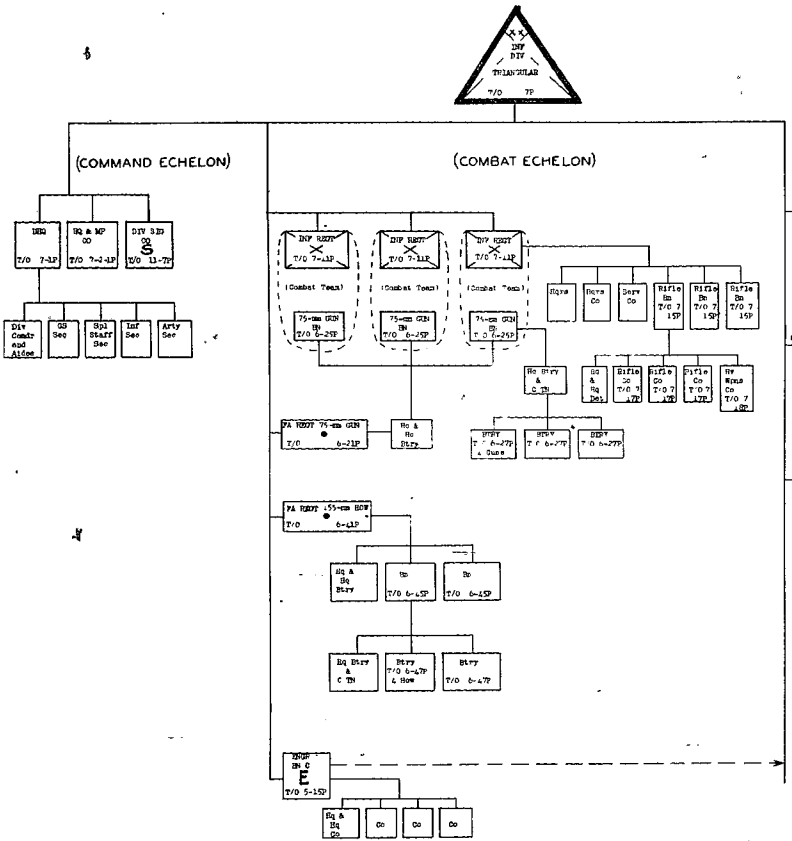
Marshal Foch wrote that "the creation of a new order of things in itself does not imply that from the outset we have the ability to impart life to the organization." Washington varied the eighteenth century tactics of line-and-successive-volleys by sudden attacks in light order. He introduced mobility to the battlefield. He had seen Braddock's regulars mowed down by the fires of French and Indians, from cover.

The men of the Confederate and Federal Armies in the Civil War drew favorable comment from foreign military critics on their intelligence. They skirmished, shot from cover, and avoided mass tactics, though mass tactics (volley firing by ranks) was at that time in the military manuals.

Changes in combat tactics have been developed since the World War, based upon experiences in that conflict. And mass for infantry, as a result, now refers to speed, timing, direction, flat and high-angle fire-support and general intensity of attack. History repeats itself and we are now correcting the errors of the past, particularly those of the World War when we suffered heavily by trying to copy British and French tactics. The experience gained was paid for heavily.

When we say we have new tactics for our new infantry we are not implying the introduction or discovery of a new science; the principles of war still exist, and we penetrate, envelop, defend passively, actively, or by retrograde action in general, about the same as we always have done in the past.

But, as General Lynch so tersely puts it, "Armament conditions organization, and a tactical system is implicit in the organization adopted. There seems, however, to be a rather widespread misunderstanding of the tactics that underlie the new organization of the infantry regiment, due perhaps to the fact that the new armament is known only theoretically to most of the army; and tactical thought still

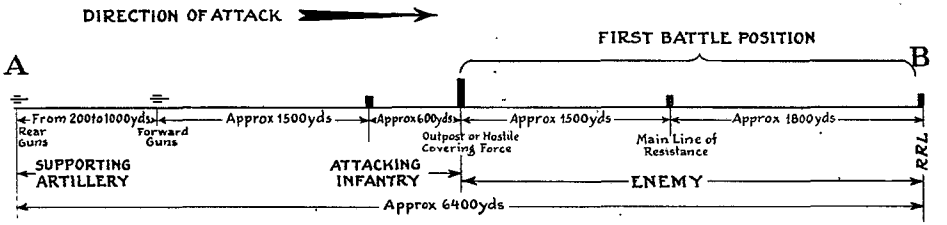


FUNCTIONAL CHART OF THE NEW TRIANGULAR DIVISION

images a transfer to the new regiment of the tactics of the old organization."

We have briefly described the new armament and organization, the success of which depends upon the modern application of the old tactical principle, fire and movement.

The new organization is capable of faster movement, from the largest to the smallest unit; it contains, organically, more fire-power than ever before in its history, and while it still requires artillery support of all calibers, it is not, in the area of close combat, so completely dependent on artillery as it has been in the past.



SKETCH No. 1

Infantry tactics of the old organization envisaged an attack by infantry supported constantly by adequate artillery fires. Artillery established a base of fire in the vicinity of point A on Sketch No. 1 an approximate range (in this purely arbitrary example) of 6,400 yards to point B. If infantry was required, as it frequently was, to carry an attack to a second battle position, it is obvious that guns with an average effective range of 7,500 yards (75-mm) must displace forward. When they did so, fire was temporarily less effective.

Small targets, machine guns, pill-boxes, defiladed weapons, mortars and concealed resistances could only be brought under artillery fire by the long-winded process of designation by infantry commander to artillery liaison officer, then telephone, or radio (if it worked), or runner, to firing battery. The time lag between need and delivery of fire was too great The weapons which stopped infantry were too small, too numerous, and too well concealed. The attack bogged down!

Into the field of infantry tactics we now bring—in a smaller way—the principle of the base of fire. We introduce three purely infantry bases of fire on this same hypothetical battlefield.

The rifle company establishes a base of fire. The company commander indicates the positions from which 60-mm mortars and light machine guns belonging to the company will support the advance of the three platoons.

The battalion establishes a base of fire. The battalion commander indicates positions from which .30 caliber heavy machine guns, 81-mm mortars and .50 caliber machine guns belonging to the battalion will support the advance of the three rifle companies.

The regiment in certain situations establishes a base of fire. When a battalion is initially held in regimental reserve, the regimental commander may indicate positions from which weapons of the reserve battalion will support the initial phases of the attack by the assault battalions.

During an attack, a rifle company commander may find that terrain and the situation favor establishment of from one to a half-dozen successive bases of fire. Having designated the successive objectives of the company, he may dispose his 60-mm mortars and light machine guns during the attack either in rear of his own platoons or to advanced positions behind adjacent platoons. It must be remembered that a company base of fire is not a point. It is an area in which mortars and light machine guns are sited and from which they fire. Naturally the characteristics of the two weapons, range, type target, volume desired and purpose of the supporting fires influence locations and the amount of dispersion of weapon sites. In one case the site of mortars and light machine guns may be almost coincident. In another, lack of cover or observation may require widely separated sites for the different weapons. It is purely a question of fitting the tools to the job, on the ground. Again, we may find situations in which but two suitable bases of fire exist for 60-mm mortars while a dozen or more exist for the light machine guns in an attack toward a given objective.

Nor is selection of company bases of fire a purely selfish one. It is to the advantage of the commander of Company A to select bases from which he can, in addition to supporting his own platoons, also assist adjacent Company B, because if Company B goes forward, its company weapons will assist Company A by flanking fires. Note also that the advanced location of Company B clears and opens up terrain into which Company A can move weapons to firing positions for enfilading resistances confronting Company A.

So, as the company commanders have selected bases of fire and employed the principle of cooperative fires and weapon-positions (there being no company boundaries), we find that battalion commanders employ bases of fire to support the advance, and protect the flanks, of their companies and on occasion assist adjacent battalions. The battalion weapons, being somewhat heavier and in greater numbers than company weapons, require that considerable more care be given to the selection of battalion bases of fire. While company mortars and light machine guns may shift position quite rapidly and frequently, the greater weight, range, and ammunition supply problem of the battalion weapons do not suggest short or frequent change of positions.

GETTING THE MOST OUT OF MOTORS

The United States exceeds any other nation in the world today in the production of motor vehicles. Yet it is only in the past few years that motor vehicles have been provided in sufficient numbers to permit our Army to apply its motor-mindedness to movement of personnel, weapons and supplies in a big, effectual way. There is not a single motorized unit in the service today that has not tested and perfected a "standing operating procedure." Such procedure reduces to habit the processes of alerting, ordering, loading, forming, starting, moving, and unloading complete units We have observed regiments moving into a rented field for overnight bivouac, kitchens leading, and so accurately timed was the procedure that by the hour the usual rapid steps of erecting camps, gassing vehicles and washing hands for supper had passed, the food was on the serving tables and the companies were lining up rapidly to take it away and "make" a dance in the village that night

Shuttling, the expedient method of using a limited number of trucks to move equipment, supplies, weapons and personnel, from point to point by making one to one and a half round trips totaling 225 miles per vehicle per day, has been found practical. It is not fatiguing, nor is it normally damaging to vehicles. By such methods complete units have been moved for distances up to 75 miles per day. There is nothing more exhilarating to officer or enlisted man than the experience of one of these "motor-treks." There exists a camaraderie that is pronounced. There is no confusion, loud shouting of orders or disorganization evident at any time. The jobs of advance and supply details, of troops en route and in bivouac, are planned for days and weeks ahead. There exists a silent pride in being ready for each succeeding step of the movement. Drivers and mechanics need no orders for greasing, checking, repairing. They confer, consult, examine, check and repair in silence and without any supervision They know that their vehicle will move out again very shortly, and they work all night if necessary to have it roll past the I P with the column. To appreciate the Army's abilities in motor-moving, one must actually participate, or observe. It is a revelation!

There has been considerable comment and some doubt expressed in the past few years concerning the value of completely or partly motorized or mechanized units. We have by adoption of the principle of "pooling" vehicles in higher echelons, avoided the creation in every unit of a mass of vehicles which would be used only part of the time We have been careful to distinguish between the picture of complacent closed-up columns and the vulnerable air target. And we have balanced our organizations from company and battery up to corps, army and GHQ reserves, so that the motor and mechanized picture pyramids up to maximum possible requirements, but on a logical basis that permits flexibility in actual tonnages available for supply and for reasonable tactical movements of troops. We have realized that soldiers can neither enter upon a battlefield in an unarmored truck, nor clear an area for detrucking troops by reconnaissance and screening operations in unarmored trucks.

There is a place to get out and fight, though we occasionally see evidence in maneuvers that this vital fact is overlooked.

It is illogical to assume that horse-cavalry can keep ahead of infantry or other arms which now advance 50 to 300 miles or more a day. So cavalry has been reorganized and mechanized units included—swift, well-armed and armored, and capable of preceding and protecting the motor column. Nor do we neglect the faithful horse. We now have "portée cavalry"; and troops, squadrons, and perhaps larger units will roll along in their special vehicles to operate efficiently as only horse-cavalry can, in those rough and broken areas of terrain between roads in which horse-cavalry—and nothing else but—can perform the task.

Justification of motorization and mechanization in actual warfare has recently appeared before us, in Europe The heavily mechanized forces of Germany crashed through with startling speed and certainty to objectives deep within the Polish lines. Followed swiftly by motorized infantry protected by light mechanized cavalry, the objectives were consolidated and advance to another was begun. It has been said that the German drive through Poland might have been accomplished in a week except for the desperate bravery of the Polish defenders.

Possessed of definite air superiority, the Germans discarded the Douhet theory for one of definite support for their ground forces. Employing about 90 per cent of their air force, they took and held complete mastery of the air. Well knowing that the western Polish lines were but covering forces for completion of mobilization and concentrations behind the Narew, Vistula and San Rivers, the German air force struck first at the rail lines in the interior of Poland and definitely stopped the Polish mobilization and concentrations. The possibility of air assistance for Poland from England or France soon passed out of the picture, as landing fields, airdromes, and air bases throughout Poland were so systematically pock-marked with bombs as to absolutely prevent landing or taking-off. Air superiority provided German forces with complete information of location, composition, and movement of practically every Polish force in the field Concentration, shifting, or employment of Polish reserves for counterattack purposes were impossible. In most cases located reserves were bombed and dispersed again and again. In ring-parlance Poland was hit with everything but the water-bucket, and even that was on wheels.

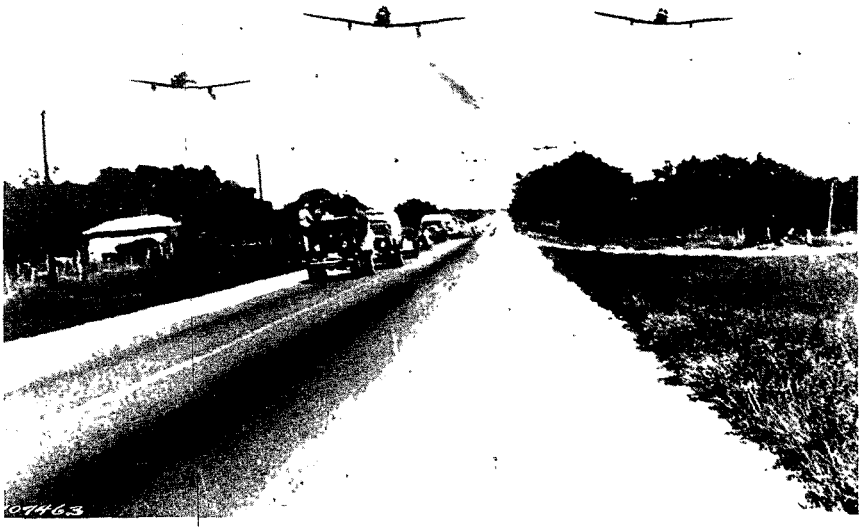
The entry of Russia via the back door was not necessary to a German victory. It simply added to the death agonies of an already paralyzed army.

"But the terrain of Poland was exceptionally suitable for such operations" we hear. Perhaps, but let us not forget the estimates of military experts of "three to six years" for an Italian conquest of Ethiopia! And in that campaign motors and mechanization played a major role—even though roads were poor and in some places temporarily non-existant.

Harking back to the Spanish Civil War we see a startling example of how not to use motors.

GUADALAJARA

In March 1937 an Italian volunteer corps formed the spearhead of an attack by Franco's Insurgents against the main highway from Madrid to the south, then a vital link in the Government supply system. Guadalajara, the city from which this action takes its name lies at the intersection



USA Signal Corps

GAS ATTACK ON A MOTORIZED COLUMN BY 3D WING SHIPS, SAN ANTONIO, TEXAS

of the Siguenza—Madrid highway and the Madrid—Valencia north south highway. The operation was intended to cut this latter supply route

The Italian corps consisted of two motorized divisions, each of two infantry regiments, a machine-gun battalion, a battalion of light tanks and portée artillery. This force concentrated unobserved by Government forces near Siguenza, about 10 miles northeast of Guadalajara.

From 8 to 12 March its attacks progressed to the line indicated on Sketch No. 2, page 18. Government forces had not discovered the concentration of the Italian corps and were unprepared. Italian advances were rapid.

Between 10 and 12 March Government GHQ concentrated 100 Russian planes at the all-weather airdrome at Alcala de Henares. During the following week, these planes, approaching in rain, mist and heavy weather, delivered repeated attacks on the Italian motor columns. On the 12th the Italian 2d Division motor column, stretched out over 12 miles of muddy difficult roads, was surprised and heavily bombed and machine-gunned. Over 500 bombs and 200,000 rounds of machine-gun bullets were poured into this column alone, in one day.

It is unnecessary to describe the Government air attacks of the 13th to the 19th. They found the Italian motorized divisions in full flight, that is, those parts capable of motion. The formations of the motorized Italian forces in retreat were eminently more suitable for their initial advance—the air targets were diminished in size and quite few in number.

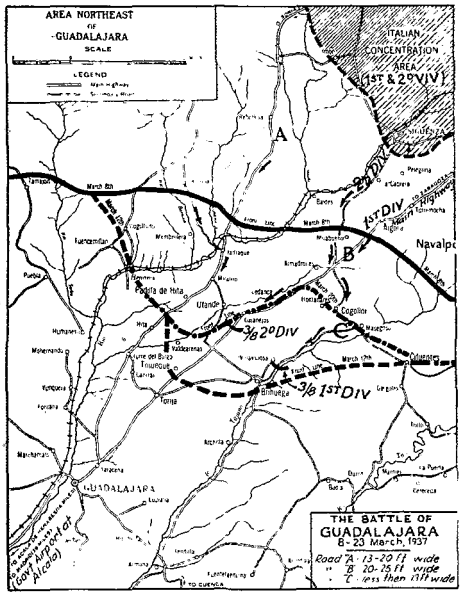
Where was the Insurgent air force? Bogged down in mud at various temporary landing fields, unusable in heavy weather, north and east of Siguenza. There they stayed. Italian failure to provide air protection for this motor movement resulted in a disaster involving the complete destruction of two powerful divisions!

CONCLUSIONS

Our considerations of the new infantry have been general in nature. We are concerned with principles only. Application involves details more suitably set forth through the medium of theoretical map exercises, or actual field maneuvers. We are entering a period of training at service

schools and in the field which will produce many such mediums in the next few months.

But it is important that we prepare our minds for this shift to mental high gear which is essential at present. We cannot approach either theoretical or practical exercises properly, unless we have a general concept of the effects of reorganization upon what we know and what we must learn. We might approach our problem by a procedure somewhat as follows:



SKETCH NO 2

Our first efforts should be to understand the purpose of the new organizations. What is their "raison d'etre," their particular function, in the infantry scheme? How will we train them, move them, fight them? What are their needs, acting alone or as part of a larger force? How are they led, commanded, communicated with? What changes in staff procedure are involved? What is their battle-life? How have their frontages been affected in attack, or in defense, by the changes in strength and in fire-power?

Our next step should be to know the weapons we now include as an integral part of the company, battalion, regiment. What are their essential characteristics? How do they differ from similar World War weapons in weight, method of transport, rate of fire, range, site of emplacement, or employment, angle of fire, effect of fire, armor penetration, vulnerability? What is their particular role in the whole scheme of fire from bullet to shell, with reference to support of maneuver in "fire and movement"? Who directs each weapon in combat? How is such direction applied? What intra-unit or intra-arm method of liaison increases the effect of all weapons? What general principles govern their employment in base-of-fire tactics—in attack, or in defense? How are they supplied in battle?

We should view motor movements with a definite respect. While results to date are indeed startling they will become more so as a result of habitual usage. But they are of two kinds and they present definite and increasing dangers as they progress from one (strategical) to the other (tactical). And who, in the light of modern air and mechanized threats, can say just where the line of demarcation begins and ends? That is an essential function of command. You determine it, or suffer the consequences.

We must keep in mind the point-to-point principle. The movement, whether strategical or tactical must be (between any two points) protected, concealed, rapid, undelayed and completed within the time limits imposed by the situation.

We must provide air and mechanized reconnaissance, maintain superiority of both in the zone of movement, and perfect the details of standing operating procedure to the point where units moved from covered bivouac to assembly position for attack are able to load, travel, detruck, clear road, receive attack orders and launch an attack with machine-like precision.

We must adjust our staff procedure and command processes to appreciation of the fact that "while troops ride, commanders decide." The terms "preconceived maneuver" and "advance planning" have long been but pretty theoretical catch-phrases. They will now find actual and complete application. Office procedure, written estimate, order, annex and march-table are fast becoming obsolete. Commander and staff must think, move, and produce action in terms that smell strongly of gasoline and its resultant speeds.

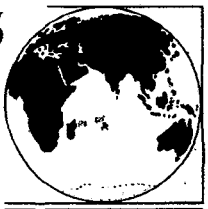
Above all let us realize what this shortening of time means. It means that we must become familiar with road-nets for days of probable future advance, and with the intervening terrain. It means that having a fixed process of moving to battle, we must have permanency of combat-teams to enter battle. It means that an astounding amount of decentralization of control must exist while at the same time the high command has its hand resting constantly, though lightly, on the bridle-reins of its "combat-teams"—ready at all times to apply the directing aides to coordinated action.

It means that infantry now rests, moves and fights while constantly protecting itself in five directions—north, east, south, west and overhead.

It means finally, that infantry has accomplished its own revitalizing and stands ready to take its place with its role unchanged—*to seize and hold ground.*



MILITARY NEWS around the WORLD



BY MAJOR WM. H. SPEIDEL, *Infantry*

ARGENTINA

France, Norway, Bohemia and Moravia were added to the list of the fifteen most favored nations on 21 October, 1939. In that category 95 per cent of the imports from these nineteen nations may be admitted to Argentina without restriction. Imports of a second, less favored group are subject in part to quotas. Those nations listed under a third and last group are subject to restrictions affecting more than 75 per cent of their imports.

(*Foreign Press*)

BALTIC STATES—LATVIA, LITHUANIA, ESTONIA AND FINLAND

The population of Latvia, Lithuania and Estonia consists mainly of peasants and a bourgeois society of Germans and Poles. Following the establishment of their independence they became organized as parliamentary republics. This form of government eventually developed into an authoritarian form—Lithuania 1926, Latvia 1934 and Estonia 1936.

The Letts and Lithuanians are blond, long-headed Nordics, perhaps Indo-European, but are neither Finnish, Slavic nor German. At any rate they have occupied their territories for centuries. The southern part of Lithuania contains a number of Old Prussians who had been entirely germanized by the Teutonic Knights. The Estonians are Finno-Ugric, descendents of Finns and Magyars.

The languages of Latvia and Lithuania are Indo-European, but are entirely different from each other, the former having been influenced by the German. Lithuanian is considered the oldest form of the Indo-European languages, older even that ancient Sanskrit. The Estonian language is Finnish, but the Finns can only understand them with great difficulty.

The religion of Estonia and most of Latvia is Lutheran; that of Lithuania and a smaller portion of Latvia is Catholic.

(*Revue des Deux Mondes*, November 1939)

Finland

The Infantry Battalion:

This unit consists of 500 men, about 400 rifles, nine automatic pistols, 18 light and 12 heavy machine guns. Its normal frontage is 820 yards; in the attack this is limited to 2200 yards and against a fortified enemy to 440 yards. It can be deployed in depth up to 1640 yards. Two companies are employed in the assault, one company and a portion of the machine-gun company in the reserve. The balance of the heavy machine guns are apportioned among the rifle companies. Usually one platoon or company of artillery is assigned to the battalion. In the defense the frontage is limited to 2200 yards and the depth to 1640 yards. The tactical organization employs security detachments, a main line of resistance and a reserve. It provides for its own defensive obstacles, strong points and light machine-gun nests. In the second line it places heavy machine guns and infantry cannon; also reserve heavy machine guns and one-third of the battalion reserve. Its offensive is characterized as being defensive.

(*Militär-Wochenblatt*, 1 October 1939)

National Defense:

Prior to the outbreak of hostilities the Finnish Army consisted of one army corps comprising two infantry divisions and one cavalry brigade.

Each infantry division included the following units:

3 regiments of infantry,
2 regiments of artillery (1 light, 1 heavy),
1 tank company,
1 armored-car company,
Several battalions of cyclists,
1 pioneer battalion,
1 signal battalion,
1 dog company,
1 battalion of light infantry.

The cavalry brigade consisted of:

2 regiments of cavalry,
1 signal battalion,
1 battery of pack artillery.

The coast artillery comprised three regiments.

Aviation consisted of seven squadrons with a total of 150 planes, 165 officers and 800 men.

The Navy had two armored coast guard vessels, five submarines, twenty-four gun boats and patrol boats with 89 officers and 800 men.

The police and forest guards totalled 4000 men each.

The Civil Guard, a body of militia organized in local communities, consisted of 450 officers and 100,000 men.

The Lotta Svard, comprising 80,000 members, is affiliated with the Civil Guard. It is composed of women volunteers who serve without compensation, performing various duties pertinent to hygiene, and defense against gas and aerial attacks.

(*La France Militaire*, 11 November. 1939)

BELGIUM

Antitank Gate:

The Belgians have devised an ingenious tank obstacle which consists of a series of interlocked gates mounted on steel rollers, similar to those used in levelling tennis courts. The base is so broad that the obstacle cannot be overturned. It can easily be transported from place to place by tractor. Instead of smashing through the gate the tank can only push it along with increasing difficulty. The result is to slow up the attack and immobilize the attacking units under the shell fire of the defenders. It is believed by the Belgians that these gates can only be destroyed by heavy artillery.

(*Foreign Press*)

BOLIVIA

Twelve per cent of the exchange accruing to the Government from the sales of minerals shipped abroad will be set aside in the Central Bank for the purpose of improving its condition when hostilities in Europe cease.

(*Latin American Financial Notes*, 14 January 1940)

BRAZIL

Great Britain and France are making large purchases in Brazil. Chilled meat exports have been furnishing especially large blocks of foreign exchange.

(*Latin American Financial Notes*, 14 January 1940)

New Air Transport Company.

A new air transport company, known as the Navegaçeo Aerea Brasileira S. A., is being organized in Brazil with a capital of about $600,000. Panair do Brasil, the present air transport company, is a subsidiary of Pan-American Airways.

(*The Aeroplane*, 29 December 1939)

BULGARIA

International Telephone Service:

The international telephone service between Japan and Bulgaria was inaugurated 25 October, 1939. Telephone messages will be relayed through the Berlin office, and the charges are 92 yen for three minutes on week days and 52 yen on Saturdays.

(*The Japan Chronicle*, 26 October 1939)

CHILE

The Exchange Control Commission requires that importers of passenger automobiles to whom an exchange quota in excess of $20,000 is granted must import 70 per cent of the automobiles in Chilean ships.

(*Latin American Financial Notes*, 14 January 1940)

CHINA

Russian Troops for China:

Over 1000 Soviet officers and men have already arrived in Chungking from the Trans-Siberian Railway via Sinkiang, Kansu and Shensi provinces to assist the Chinese in the Sino-Japanese conflict. They are said to arrive in trucks of twenty or so. As soon as they arrive in Chungking they are given regular Chinese military uniforms to wear and are sent to the front accompanied by interpreters. The group of Soviet military advisers who were recently reported to have arrived in Chungking by plane include two Major Generals. They are engaged in inspecting arms and ammunition.

Official Russian sources at Chungking have denied reports from Shanghai that a Soviet military mission has arrived in the provisional Chinese capital, also that negotiations are being conducted for the conclusion of a Sino-Soviet military alliance.

(*The Japan Chronicle*, 26 October 1939)

COLOMBIA

Population:

The results of the civil census taken on 5 July 1938, the first complete one to be taken since 1918, have been published recently. During those twenty years the population has increased by 2,846,816, or almost fifty per cent, rising from 5,855,000 to 8,701,816. Colombia is still predominantly rural, 6,008,991 inhabitants being classified as country dwellers, against 2,692,825 city dwellers.

The capital, Bogota, is the largest city in the republic, with 330,312 inhabitants. It has more than doubled its size since 1918. Colombia has six cities of more than 75,000 inhabitants; the other five are Medellin, 168,266; Barranquilla, 152,348; Cali, 101,883; Manizales, 86,027; and Cartagena, 84,937.

Unofficial figures released to the press stated that the Indian population of the republic was 105,807, divided among 398 tribes.

(*Bulletin of the Pan American Union*, January 1940)

COSTA RICA

At the close of the year 1939 the rates for controlled exchange remained at 5.62 colones to the dollar, while the rates for uncontrolled exchange remained at 5.67. The customs collections for the first ten months of 1939 were 23,273,000 colones.

(*Latin American Financial Notes*, 14 January 1940)

CUBA

At the close of the year 1939 the peso was quoted on the exchange at 88 cents (U.S.).

(*Latin American Financial Notes*, 14 January 1940)

DENMARK

The classes of 1934, 1935 and 1938, totalling 20,000 men, were released 17 September 1939. Their arms were taken up but they were permitted to retain their uniforms in order to facilitate mobilization in the event of their recall.

(*Militär-Wochenblatt*, 13 October 1939)

ECUADOR

The 1940 budget amounting to 113,050,000 sucres was ratified by the Executive 7 November 1939. That of 1939 was 117,000,000 sucres.

The rate of exchange is fifteen sucres to the dollar.

(*Latin American Financial Notes*, 14 January 1940)

FRANCE

New Croix de Guerre:

President Lebrun of France has approved a new Croix de Guerre which is similar to that of the World War except that it bears the date "1939" and is suspended from a different ribbon. The new ribbon is thirty-seven millimeters broad, down whose red surface run four stripes of green separated from one another by one and one-half millimeters, and so arranged as to allow two bands of red on the sides, each eight and one-quarter millimeters broad. For higher ranks the palm and spur will be used as formerly.

(*Foreign Press*)

Mechanized Division:

The French mechanized division consists of a mechanized brigade of two regiments, a reconnaissance regiment, a regiment of motorized infantry, a motorized artillery regiment of three battalions, one antitank detachment and the necessary pioneer, signal and maintenance units.

The mechanized regiments are equipped with the light "R 35" tanks and the new Somua tanks; the reconnaissance regiment employs the scout car. The motorized infantry is the well-known *Dragons portés*. The antitank unit is equipped with the heavy 25-mm machine gun.

(*Die Panzertruppe*, November 1939)

Increase of French Staff:

The three officers appointed to assist the Chief of Staff of l'Armee de l'Air will be known as Deputy Inspectors of Staff.

(*The Aeroplane*, 22 December 1939)

GERMANY

Some Recent Figures on the Organization of the German Army

An Army Corps:

3 infantry divisions
Corps artillery
Corps engineers
and other corps troops

An Infantry Division:

1 infantry brigade of 3 regiments
1 light artillery regiment
1 divisional reconnaissance unit
1 antiaircraft group
1 pioneer battalion
1 signal company
and administrative services

The full establishment of the division is about 12,000.

An Infantry Regiment:

Headquarters
3 infantry battalions
1 intelligence section
1 cavalry or motorcycle section
1 infantry artillery section (8 guns)
1 antitank section (12 guns)
1 ammunition column

An Infantry Battalion:

Headquarters
3 rifle companies
1 machine-gun company
1 reconnaissance section
1 signal section

A Light Artillery Regiment:

Headquarters
3 battalions (Abteilung)
1 intelligence section
1 range-finding section
1 ammunition column

An Artillery Battalion:

3 batteries (4 gun-howitzers each)

The Armored Division has various lesser components and 1 brigade of 2 armored regiments.

An Armored Regiment:

Headquarters
1 intelligence section
1 reconnaissance section (of motorcycles)
2 battalions

An Armored Battalion:

Headquarters
1 intelligence section
1 reconnaissance section
3 light companies
1 medium company

An Armored Company:

Headquarters (4 tanks, 1 command tank, 1 radio tank)
4 platoons (5 light tanks, 3 medium tanks)

The armored battalion—98 tanks; the armored regiment—204 tanks; the armored brigade—over 400 tanks.

Weapons: It is calculated that the German division now possesses 450 machine guns, from 54 to 72 antitank guns, 18 antiaircraft guns, and 24 mortars. The 77-mm field gun of the Great War has been replaced by a 105-mm gun-howitzer of modern construction. The corps and army artillery has been largely increased and rearmed with most modern ordnance.

(*Journal of the Royal United Service Institution*, November 1939)

The Heinkel He 112 Single-Seat Fighter (1150 h.p. Daimler-Benz DB.601A motor):

Dimensions: Span 29 ft. 10 in.; length 29 ft. 7 in.; wing area 183 sq. ft.; aspect ratio 4.86 to 1.

Weights: Empty 4200 lbs.; pilot 200 lbs.; radio 44 lbs.; fuel, normal range, 126 gallons, 943 lbs.; oil 88 lbs.; armament, oxygen, etc., 265 lbs.; disposable load 1540 lbs.; normal-loaded weight 5740 lbs ; overloaded weight 6490 lbs.

Loadings: At normal loaded weight. Wing 31.4 lbs. per sq. ft ; power 4 98 lbs. per h.p.; span 6.45 lbs per sq. ft.

Performance. Maximum speed 358 m.p.h. at 12,300 ft.; cruising speed 282 m p.h. at 13,120 ft.; stalling speed 90 m.p.h.; initial rate of climb 2760 ft. per min.; time to rated height (13.120 ft.). 5 minutes; service ceiling 31,170 ft.; duration (normal at 282 m.p.h) 2.65 hrs.; range 715 miles; duration overloaded at 236 m.p.h., 6.85 hrs.; range 1555 miles.

(*The Aeroplane*, 16 November 1939)

Reconnaissance Bombers of the German Air Force:

The Heinkel He 111K, Mk III (two 1,050 h p. Daimler-Benz DB 600s) : Span 74 feet, 3 inches. Length 57 feet, 9 inches. Top speed (dustbin extended) 236 m.p.h. at 13,100 feet. Service ceiling 31,000 feet. Crew 4. Three movable machine guns. Retractable dustbin underneath fuselage.

The Junkers Ju 88K (two 1,200 h.p. Junkers Jumo 211s) : Span 56 feet. Length 47 feet, 7 inches. Top speed 317 m.p h at 15,600 feet. Service ceiling 29,800 feet Crew 3 or 4. Three movable machine guns.

The Henschel Hs 126 (one 880 h.p. BMW 132 Dc) : Span 47 feet, 7 inches Length 35 feet, 7 inches. Top speed 221 m.p.h. at 9,850 feet. Service ceiling 28,000 feet. Crew 2. One fixed machine gun, one movable machine gun

The Junkers Ju 87 (one 1,200 h.p. Junkers Jumo 211) : Span 45 feet, 4 inches. Length 35 feet, 6 inches. Top speed 242 m.p.h. at 14,000 feet Service ceiling 27,000 feet. Crew 2. Two fixed machine guns, one movable machine gun.

(*The Aeroplane*, 22 December 1939)

Black Sea Commerce: At the outbreak of the war sixteen German vessels were in Mediterranean, Aegean and Marmora Seas and were ordered to take refuge in the Black Sea. German products are being shipped down the Danube to Black Sea ports where they are picked up by the German ships now engaged in a coastal trade in the Black Sea. They are using Rumanian coal because it is cheaper than that supplied by the Soviet.

(*Foreign Press*)

GREAT BRITAIN

Granting Regular Commissions:

The War Office announces that:

1. No further permanent Regular commissions are being given during the war, with the following exceptions:

(a) Cadets who were already in training at the cadet colleges at the outbreak of the war and any other candidates from the universities, officers of the Supplementary Reserve and Territorial Army, and Army cadets who had already qualified for permanent commissions or been accepted for admission to the cadet colleges.

(b) Selected warrant officers who will be promoted to fill peace establishment vacancies for lieutenant and quartermaster and similar categories.

2. All other commissions granted during the war will be "emergency commissions in the land forces for the duration of the war."

3. It is hoped at the end of the war to offer permanent Regular commissions to selected officers who are serving on other forms of commission and who wish to make the Army their career, and that such officers will be given ante-dates for all purposes to correspond with their length of service during the war.

(*Fighting Forces*, December 1939)

British Aircraft:

Forty-six British aircraft constructing firms and eighteen aero-motor constructors are engaged in the production of ninety different types of airplanes and thirty-three different type of aero-motors. Forty-five of the planes are military types, of which thirty-one are first line types. Of the thirty-three aero-motors, three types are liquid-cooled and thirty air-cooled; and seven are of 1,000 h.p. or more.

(*The Aeroplane*, 15 December 1939)

Rearmament in the African Colonies:

This has been planned on the assumption that Italy might join Germany in the war. African colonists are now urging that the defense problem of British Africa be treated as a whole. It has been suggested recently that a unified Imperial force be created in British Africa, and that it be officered by men prepared to spend their lives in the country. At present the King's African Rifles, the West African Frontier Force and the other forces in the African dependencies are officered by secondment from the British Army, and officers return to their regiments just as they are beginning to learn the language and to understand the African

Rearmament in the Eastern Colonies:

In the mandated territories Palestine has a military police force, and Trans-Jordan a Frontier Force and police (the Arab Legion).

Aden depends for protection on the Navy, but also has a little army—the Aden Protectorate Levies, which have recently been enlarged and reequipped.

Ceylon also relies largely on the Navy, but there is a strong Ceylon Defense Force under the command of British officers. During the last year this colony has increased its military expenditure over 100 per cent. The modernization and extension of the naval and air base at Trincomalee reduces the vulnerability of Ceylon to a large extent. The great strategical value of Trincomalee as a halfway base between Aden and Singapore is now fully realized.

The Straits Settlements is not content to rely on the Singapore Base alone It supports a volunteer force and an armed police force, and has recently formed a Volunteer Air Force and a Royal Naval Volunteer Reserve. Malaya as a whole has voluntarily made large contributions to the cost of Imperial defense, while the various states—Federated and Unfederated, have each enlarged and reequipped their military forces. A Malay regiment of regulars, Malay seamen in the local naval vessels and volunteer Malay forces in all three Services stand as tokens of Imperial loyalty.

(*Journal of the Royal United Service Institution*, November 1939)

Australia

Reorganization of the Army:

The Australian Army is essentially a citizen force, but commanders and staffs are provided from both permanent and militia sources. The strength of the Militia Forces has been raised from the previous total of 35,000 to 70,000 troops of all ranks. The permanent mobile force is to constitute a total strength of 7500 and will comprise two rifle battalions, a field artillery brigade and the requisite auxiliaries.

(*Journal of the Royal United Service Institution*, November 1939)

Recruiting:

Recruiting of the Second Australian Imperial Force, the Sixth Division, was recently announced to be complete. The establishment of this division will probably be between 15,000 and 18,000—a figure that is in accord with modern ideas of divisions of lower manpower, but higher fire-power and mobility, provided by quick-firing weapons and mechanization. Ample reserves are also permitted by this figure. The Australian Minister for the Army estimates that by the end of June 100,000 men will have received intensive training.

(*Illustrated London News*, 23 December 1939)

Canada

Flying Schools:

It has been announced that sixty-seven air training schools, manned by a ground crew of 40,000 men, will be required to operate the Empire air training program in Canada, under which flyers from Great Britain, Canada, Australia, New Zealand and Newfoundland will receive advanced training for war service. The training program will cost the participating governments approximately $600,000,000 during the three and a half years of the agreement. Canada has agreed to assume $350,000,000 of the estimated cost, $48,000,000 of which is to be spent during the first year of operation.

The ground establishment will consist of 2,700 officers, 6,000 civilians and 30,000 airmen. An average of 4,000 pilots will be able to undergo training simultaneously when the program is in full operation. It is estimated that the course will last two months, making it possible to turn out 24,000 flyers, gunners, observers and wireless operators each year

(*Foreign Press*)

GREECE

The new industrial mobilization law provides the Government with extraordinary powers. The prime minister is empowered to regulate foreign commerce in accordance with the requirements of national defense, to effect changes in agricultural and industrial production and to control salaries, wages and prices.

(*Militär-Wochenblatt*, 27 October 1939)

HONDURAS

The exchange situation continues about the same as in recent months, if not worse, due to the prevailing shortage of foreign exchange. No improvement in this situation is anticipated in the immediate future.

(*Latin American Financial Notes*, 29 December 1939)

HUNGARY

Following the introduction of universal military service the peacetime army now comprises seven army corps, two cavalry and two mobile brigades. The recent calling of reservists has enabled most organizations to attain almost full strength. There exists, however, a great shortage in arms and equipment.

(*Militär-Wochenblatt*, 10 November 1939)

IRAQ

Iraq has ordered 15 Douglas attack bombers to cost about $1,250,000. A military mission from Iraq, which visited England, has been in the United States and was expected to buy American machines, as orders could not be fulfilled in England. Previously Iraq has nearly always bought British machines.

(*The Aeroplane*, 22 December 1939)

ITALY

Army Commanders:

In the homeland the Army is divided into two army groups. One group, consisting of two armies (Generals Marinetti and Grossi), is commanded by Crown Prince Humbert; the other by Marshal Graciani. The latter also consists of two armies, one commanded by General Ambrosio and the other by General Bastico who took part in the Spanish War.

Artillery:

Italy has 400 light batteries, 200 heavy batteries and 60 antiaircraft batteries, comprising in all 1600 light and 800 heavy field pieces and 300 antiaircraft guns. The artillery is being rapidly re-equipped with flat trajectory weapons. This also applies to the heavy weapons of the infantry. The army and corps artillery are completely equipped.

Motorized Division:

In addition to two infantry regiments, one motorcycle battalion, one tank battalion, one machine-gun battalion, one pioneer battalion, one signal company, one kitchen detachment, and auxiliaries, the motorized division consists of one motorized artillery regiment (two battalions 75-mm guns and one battalion 100-mm howitzers) and one battery of 20-mm antiaircraft guns. The division contains a total of 36 field pieces and 36 infantry cannon.

(*Militär-Wochenblatt*, 1 October 1939)

Motorized Division:

2 regiments motorized infantry
1 battalion motorcyclists

1 battalion light tanks
1 motorized machine-gun battalion
1 regiment artillery
1 motorized train
Services

The *Celere* Division:

This is a highly mobile force consisting of two regiments of cavalry and one regiment of Bersaglieri.

(*Rassegna di Cultura Militare*, July 1939)

A new South American transcontinental air service was inaugurated by the Linee Aeree Transcontinental Italiane 22 December 1939 The initial trip carried only mail and reached Rio de Janeiro in three days. The route will be operated in four stages, a different machine being employd for each stage. The service is flown in both directions simultaneously. Stages: 1. Rome—Seville—Lisbon; 2. Lisbon—Rio de Oro (Sale Island); 3. Rio de Oro—Recife (near Pernambuco); 4. Recife—Bahia—Rio de Janeiro.

(*The Aeroplane*, 29 December 1939)

JAPAN

Mechanized Units:

The Japanese Army has three mechanized regiments, still equipped partially with transport and weapons of an experimental character. Development is being directed toward the inclusion of one mechanized regiment in each peacetime division. During the attack against Shanghai tank detachments consisted of from thirty to fifty tanks. In the present campaign pursuit companies have been organized consisting of a mechanized company reinforced with motorized infantry and artillery. Japan is employing the medium tank "M 98," weight 11 tons, armed with one 37-mm gun and three machine guns; and the light tank "M 2593," weight 7 tons, armed with two machine guns. The latter are amphibians.

(*Die Panzertruppe*, November 1939)

NETHERLANDS

With 650,000 men under arms the defense of the Netherlands is costing that country over one million dollars daily. Her weapons are modern and have been acquired primarily from England, the United States and Sweden, and to a lesser extent from Germany. She has 1000 airplanes and 40 submarines available. On the eastern border there are more than 1200 bunkers (pillboxes) and other defensive works A portion of the province of Utrecht has already been inundated.

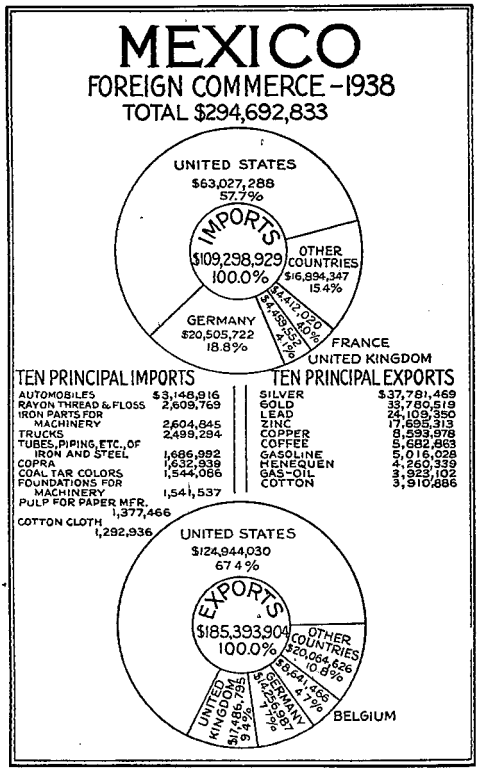
(*Militär-Wochenblatt*, 13 October 1939)

Balloons for Holland:

Holland is to have a balloon barrage. The Netherlands Minister of Defense has announced that a number of barrage balloons has been ordered from abroad to reinforce the anti-aircraft defense of Holland.

(*The Aeroplane*, 22 December 1939)

MEXICO



NICARAGUA

Two-thirds of Nicaragua's coffee crop of last year was purchased by the United States for $1,700,000. Germany's purchases of $500,000 were second and those of the Netherlands and France third and fourth

On 7 November 1939 Nicaragua initiated steps to provide for the nationalization of her railways.

On 10 November 1939 this republic announced plans for the immediate establishment of a national military academy.

(*Foreign Press*)

NORWAY

National Defense

Norway has a population of almost 3,000,000, of which two-thirds live in the country. With the exception of 20,000 Lapps and 10,000 Finns in the North, her people belong to

the Scandinavian branch of the Germanic race. During the World War Norway mobilized more than 60,000 men to protect her neutrality. Improvements were made in the military organization, but later met with discouragement as a result of the Disarmament Conference.

The king is the nominal head of the military forces. The National Defense Department controls the administration of the Army, Air Corps and Navy. The General Staff is concerned with liaison, mobilization and operations. In 1933 a Commander-in-Chief, assisted by seven aides, was provided for by law.

Military preparation is facilitated by the organization of sports, of which the Norwegians are extremely fond. Upon attaining the age of twenty every Norwegian is subject to military duty, an obligation which extends for twenty-four years—twelve active and twelve in the reserve. Conscientious objectors are required to perform civil service, under the Ministry of Justice, for a corresponding period

The Army consists of one battalion of the Royal Guard, 16 infantry regiments plus one battalion, three regiments of dragoons and one squadron of *Landvern*, three regiments of field artillery, three battalions of mountain artillery, an antiaircraft regiment (60 guns), a section of fortress artillery, one engineer regiment, one engineer battalion, and several companies of *Landvern* engineers.

The average infantry regiment consists of a staff, three line battalions and one reserve battalion. Each battalion is composed of three rifle companies and one machine-gun company (9 guns). The cavalry regiment is made up of four squadrons (one of which is machine gun), one company of cyclists, a squadron of motorized machine guns and a section of armored cars.

The Air Service is not a separate arm, but distributed between the Army and the Navy. Its organization is a regiment consisting of one combat squadron and one reconnaissance squadron, and one squadron (corps aviation).

The principal military establishments are the central arsenal at Oslo; the arsenals at Kristiansand, Bergen, Trondheim, Northern Norway and Raufuss; the arms factory at Kongsberg and the ammunition factory at Raufuss.

The principal naval bases are Karljohansvern (near Horten), Oslo, Bergen and Trondheim. According to the figures of 1936 Norway had four battleships, three (torpedo boat) destroyers, 25 torpedo boats, three sea-going torpedo boats, eight patrol boats, nine submarines and 15 other types of seacraft (mine layers, tenders, etc.). The personnel is made up of 134 officers (two admirals) and 1898 sailors. The country's best naval defense lies in the ruggedness of its coast line and in the thousands of islands scattered along its coastal fringe

(*La France Militaire*, 14 December 1939)

PARAGUAY

The fiftieth anniversary of the founding of the National University of Paraguay was celebrated 25 September 1939 at a special assembly in the auditorium of the university. In further recognition of the anniversary the Post Office Department of Paraguay authorized the issuance of a series of commemorative stamps.

(*Bulletin of the Pan American Union*, January 1940)

PANAMA

TRAFFIC THROUGH THE PANAMA CANAL IN NOVEMBER 1939

Types of Vessels	November 1939			November	
	Atlantic to Pacific	Pacific to Atlantic	Total	1938	1939
Ocean-going commercial traffic	266	223	489	505	435
Small commercial vessels under 300 net tons	38	32	70	67	75
Noncommercial vessels:					
United States Government	17	15	32	41	23
Colombian Government		1	1	2	
For repairs	1	1	2		4
TOTAL	322	272	594	615	537

(*The Panama Canal Record*, 15 December 1939)

PERU

Callao Port Completed: Built at a cost of between $15,000,000 and $20,000,000 over a period of twelve years, the Callao harbor works reached its completion with its inauguration by President Oscar Raimundes Benavides on 2 December 1939. The first sections were placed in service five years ago. The new section will provide for three additional liners and will give the ancient port of Callao one of the most magnificent waterfronts in the world.

(*Foreign Press*)

POLAND

Three out of Poland's four destroyers got away after the fall of Gdynia, and are now co-operating on active service with the British Navy. The Polish submarine *Orzel*, after escaping from Tallinn, where she had put in for repairs, cruized about for weeks, and finally crept out of the Baltic and through the Skagerack. These ships have rendered valuable aid in patrol work and the rescue of survivors from mined and torpedoed ships.

(*Illustrated London News*, 16 December 1939)

RUMANIA

Population:

Total	19,500,000
Rumanians	14,250,000
Germans	750,000
Ukrainians	800,000
Bulgarians	450,000
Russians	500,000
Turks	250,000
Hungarians (Magyars)	1,400,000
Others	1,100,000

The former Russian territory of Bessarabia contains a population of 2,700,000, divided as follows:

Rumanians	1,300,000
Ukrainians	500,000
Russians	415,000
Bulgarians	225,000
Germans	90,000
Others	170,000



RUMANIA'S MINORITIES

RUSSIA

New Conscription Law:

The new conscription law published 1 September 1939 provides for the following:

The period of active service of noncommissioned officers in the army and the air service is increased from two to three years.

All young men who are eighteen years of age will be inducted into the service immediately upon graduation from high school.

Men will be required to remain on reserve ten years longer (until the age of 50).

The reserves are divided into two categories, the second consisting of specially trained and qualified women.

The training requirements of the reserves have been increased.

The period of active service for officers of the regular military establishment has been lowered considerably.

Pupils from the fifth to the seventh grade, inclusive, are to receive preliminary military training.

In the coast artillery and coast guard services all men, including noncommissioned officers, are required to serve four years.

The period of service in the Navy is five years.

The period of service of the line soldier in all branches, exclusive of the air service and the units of the frontier guard, remains unchanged (two years).

(*Krasnaya Zvezda*, 2 September 1939)

Black Sea—Baltic Highway:

The Dnieper-Bug Canal, now under construction in the western regions of Soviet White Russia, will be completed by 15 April 1940. The new canal connects Western White Russia and the Ukraine with the south of the Soviet Union. Oil, salt and other mass freight will go by this waterway.

The canal in the Pinsk-Brest Litovsk section connects the Pripet and Bug Rivers. From the Pripet vessels will reach the Dnieper and thence the Black Sea.

LIMITATIONS AND CHARACTERISTICS OF PRESENT-DAY SCOUT CARS OF THE SOVIET ARMY

Model	Weight (tons)	Length (feet)	Breadth (feet)	Height (feet)	Speed (MPH)	Crew	Thickness of armor plate in inches	Armament	Cruising range in miles	Fordability in inches	Drive	Remarks
Scout Car "BA 27"	4 5	14 8	5 9	8 1	28 (36 HP motor)	4	24-.51	1 37-mm gun 1 MG		19 7	Rear axle	Being gradually replaced by more modern equipment
Light Scout Car "Broniford"	3 2	12 2	5 4	6 3	47-53	2-3	35	1-2 MG 1 automatic pistol	155	15 7	Rear axle	Modern type with revolving turret
6-wheeled Scout Car (Ford chassis)	7	16 2	6 3	8	43 5 (85 HP Motor)	4	43-55	1 37-mm gun 2 MG or 1 45-mm gun 1 MG	155	23 6	Both rear axles	Good mobility. Reserve wheels may be employed to install fourth axle. Mobility may be increased by attachment of chains to rear wheels.
6-wheeled amphibian Scout Car	9	17 3	6 9	7 9	40	4	43-55	1 37-mm gun 2 MG		Buoyant	Both rear axles	MG turret revolving limit 270 degrees

(*Die Panzertruppe*, August 1939)

During the short period before 15 April eight locks, nine dams and fifteen miles of canal and other structures must be built. Up to 4,000,000 cubic meters of embankment must be constructed.

(*Pravda*, 9 January 1940)



FROM THE BLACK SEA TO THE BALTIC

The Russian Army:

The territorial organization of the Russian Army comprises fifteen Military Districts and two Military Commissariats. These districts extend from the western borders of European Russia, where the concentrations are heaviest, to Eastern Siberia. In moving from west to east the concentrations become lighter and the areas covered by the districts correspondingly larger.

The peacetime army consists of 100 infantry divisions, 30 cavalry divisions and five mechanized divisions. Of this force 77 per cent are regulars and 23 per cent territorials. The total number of trained effectives probably amounts to 6,000,000 men. It is believed that Russia can mobilize from 11 to 12 million men. The number of conscripts in each class approximates 1,200,000. From this figure must be deducted at least 300,000, who for one reason or another are exempt from military service. Of the remaining 900,000 a little over half is taken into the regular army; the rest is absorbed in the territorial force

These figures do not include any of the frontier guards or police detachments.

At the beginning of 1937 Russia had approximately 46,000 officers, of which 4,500 had belonged to the old Imperial Army, 25,000 had come from the Soviet military schools and the balance had never gone beyond the primary or secondary schools.

According to press reports at least 30,000 officers have been liquidated. The number includes:

3 marshals out of 5,
13 generals (with rank of army commander),
57 generals (with rank of corps commander),
110 generals (with rank of division commander),
202 generals (with rank of brigade commander).

(*Foreign Military Notes*)

SALVADOR

The new expropriation law issued 25 July 1939, relative to property or works declared of public utility, has been enlarged to include patents and mining. No change affecting other items was introduced into the new law.

(*Bulletin of the Pan American Union*, January 1940)

SPAIN

Large appropriations have been made for the construction of a new merchant marine. A new board has been created to reorganize the navy and speed up naval construction. Two small warships have already been launched. Particular attention has been given to the development of aviation, the importance of which was proved during the Civil War. An Air Ministry, created in September, has developed a new code of aviation regulations. The interest shown in aviation was indicated recently by the keen competition between contestants for the 400 air pilot vacancies. The *Falange*, in connection with the Air Ministry, has undertaken the organization of youth interested in aviation. Flying clubs are being revived. The Spanish University Syndicate has undertaken many flights in gliders, steps preliminary to the training of future pilots.

(*La France Militaire*, 25 November 1939)

Franco-Spanish Trade Treaty:

France and Spain, after several months' negotiations, signed a trade treaty 13 January 1940 to replace an older treaty that had become dormant as a result of the Spanish Civil War. Under the terms of this treaty France commenced shipment of wheat to Spain 15 January. Spain will also receive rice from Indo-China and a variety of manufactured goods in exchange for a large portion of her orange crop. France will get liberal quantities of minerals, iron ore, pyrites, mercury, lead and zinc.

(*Foreign Press*)

SWEDEN

The Army:

Compulsory military service, required of men between twenty and forty-two years of age, has been in effect since 1901. Active service for enlisted men varies from 140 to 225 days, for officer candidates 260 days, and for officers 33 months. *Landstorm* troops (ages 35 to 42) have periods of voluntary instruction. Numerous sport and rifle associations (180,000 members) contribute to the pre-military training of recruits.

Because of the ruggedness of the country, numerous forests and lakes, Sweden concentrates on mobility rather than on large concentrations. Light animal-drawn vehicles are preferred to heavy vehicles The tactical unit is the division, composed of three regiments of infantry armed chiefly with automatic weapons. At war strength the army would comprise 600,000 men.

The air corps consists of a few hundred modern planes of French, British or German manufacture. The antiaircraft defense is a model of the latest development.

The general staff is composed of carefully selected officers. The Chief of Staff is Lieutenant General Olof Gerhard Thoernell who, during his recent visit, deeply impressed General Gamelin.

(*La France Militaire*, 9 December 1940)

Sweden's peacetime army consists of four divisions; 35,000 fortress troops and 100,000 reserves. It is expected that she can train, equip and organize 25 to 40 divisions. Sweden, Norway and Denmark could provide about one million trained men, about 500 fighting planes, 14 coast defense ships or old battleships, 35 submarines, and almost 150 small naval vessels.

A great asset to Sweden is the giant Bofors arms factory. At Boerkborn is located the largest powder factory in Europe. Tanks and planes are manufactured at Landskorna and Linkoeping.

Recently 500,000 gas masks were distributed to air raid precaution units. Many citizens have purchased their own masks. The Government has allotted $2,880,000 for air raid precautions.

(*Foreign Press*)

SWITZERLAND

Switzerland has been in a state of mobilization since 28 August 1939. On 11 November 1939 General Guisan was empowered by the Federal Council to call all able-bodied men to the colors whenever he may decide the defense of the nation requires it.

(*Foreign Press*)

The new Fourth Army Corps, provided for in the new tables of organization for the Swiss Army, became effective 1 January 1940. It is commanded by Colonel Lachard, formerly Chief of the General Staff.

(*La France Militaire*, 29 December 1939)

TURKEY

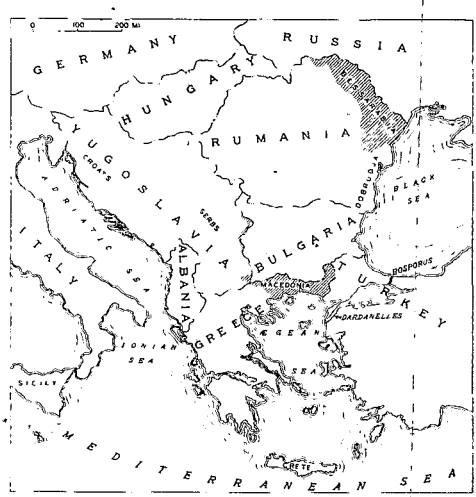
Turkey as a Balkan Power:

Of all the Balkan powers Turkey undoubtedly is the most powerful, the most independent and enjoys the greatest sphere of influence. To be sure, her Balkan territory consists only of Turkey in Europe, an area of but 9,360 square miles as compared with Bulgaria, the smallest among the other Balkan states with an area of 39,825 square miles; but this is compensated for by the fact that this limited area plus her great Anatolian territory of 285,132 square miles are sufficient to control the Dardanelles and the Bosporus and rival the influence of Russia in the Black Sea.

In 1934 Turkey, Rumania, Yugoslavia and Greece formed the Balkan Entente, organized at that time for the purpose of limiting the influence of the great European powers in the affairs of the Balkan States.

Although her reserves are smaller than those of Rumania and Yugoslavia, Turkey has an active armed force of approximately 200,000 men as compared with Rumania's 162,000 and Yugoslavia's 134,000. Her defense of the Turkish straits and her rivalry with Russia in the Black Sea have forced her to assume the responsibility of the greatest sea power in the Balkans. Her Navy of approximately 56,000 tons, which includes a number of excellent German ships, is seconded only by Greece with a tonnage of approximately 43,200 tons. Bulgaria has only a small Danube patrol, Hungary has no navy at all, Rumania has but 11,000 tons and Yugoslavia 13,000 tons.

(*Armaments Year-Book, Gesamtwehrkräfte Aller Staaten*, and *Foreign Press Reports*)



THE BALKANS

VENEZUELA

Dollars are still scarce for the majority of local banks and are being used solely for collections. Banks having any exchange to spare sell to those in need of it. One bank's dollar shortage is understood to be slightly more acute than in previous months.

(*Latin American Financial Notes*, 29 December 1939)

YUGOSLAVIA

Selection of Army Officers:

Appointments to the rank of second lieutenant in the Regular Army of Yugoslavia are made from among:

1. Men who have completed their studies at the preparatory school of the Military Academy.

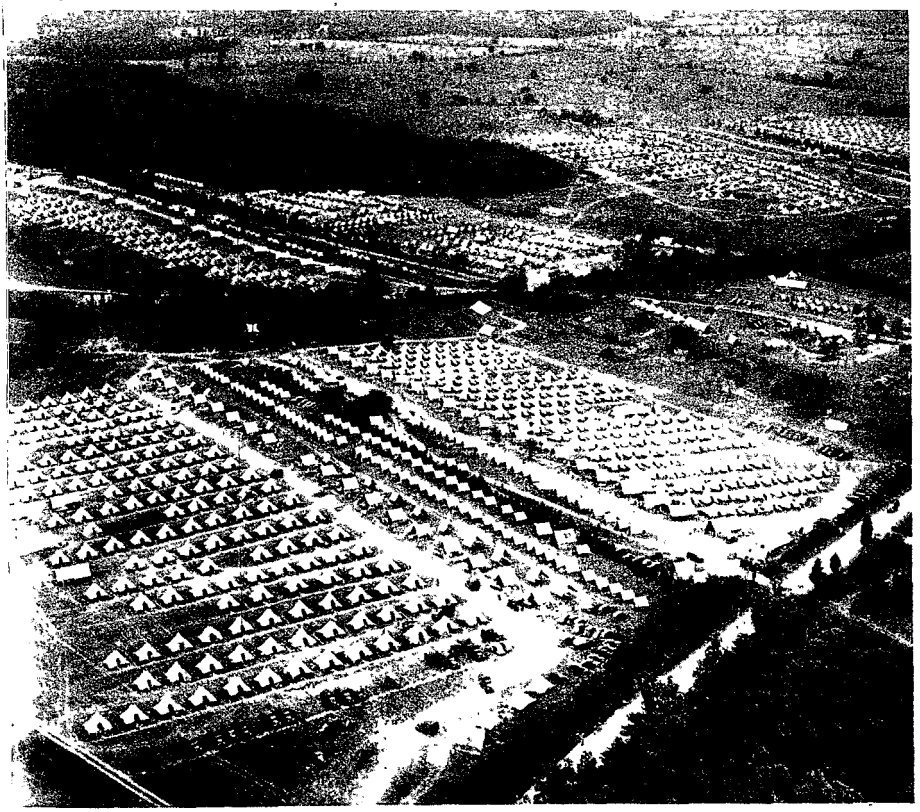
2. Men who are Yugoslav subjects and have completed their studies at a foreign military school of the same class as the preparatory school of the Military Academy, if they apply to enter the national army in the course of the year following their leaving the school.

3. Sergeant-majors:
 (a) Who have served in that rank for at least four years.
 (b) Who have been selected by their superior officers and have passed the examination for second lieutenants.

4. Second lieutenants of the reserve and sergeant-majors of the reserve allowed by their superior officers to take the examination for the rank of second lieutenant in the regular army.

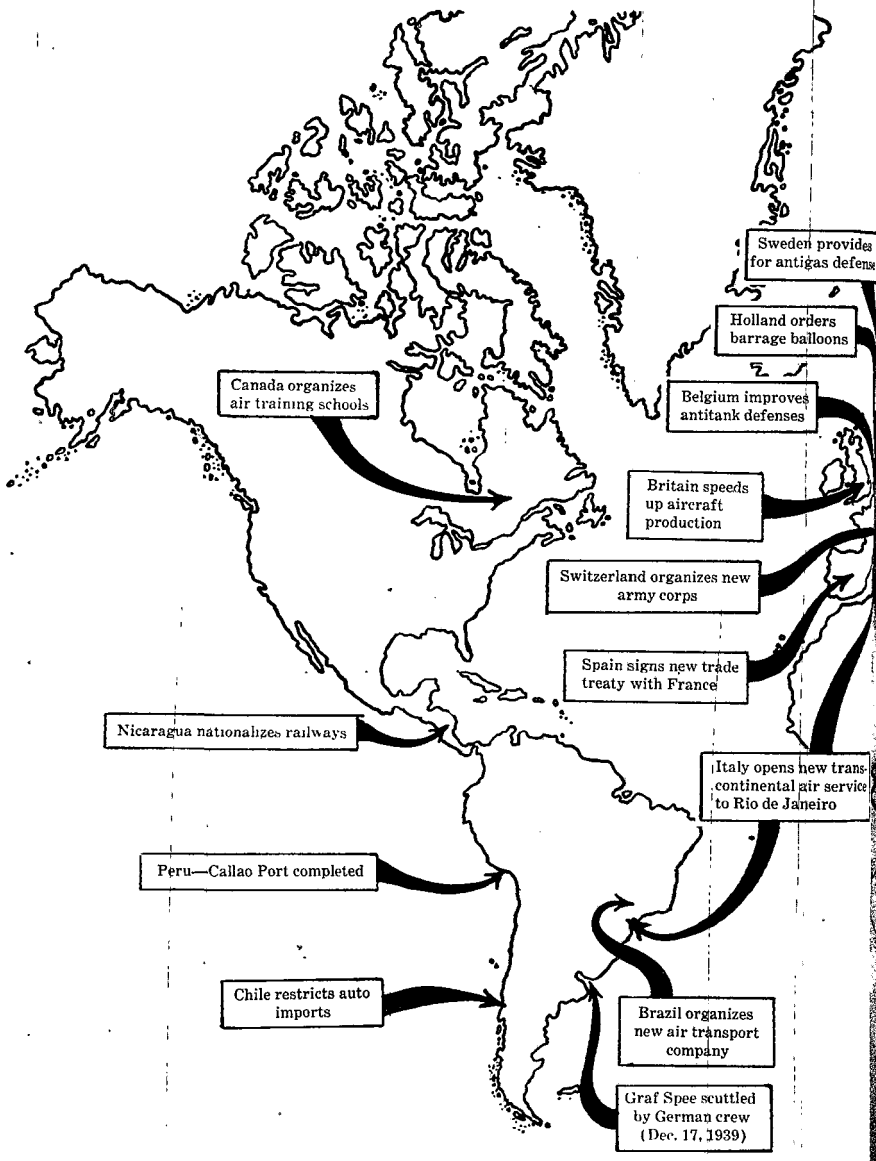
(*Armaments Year-Book*)

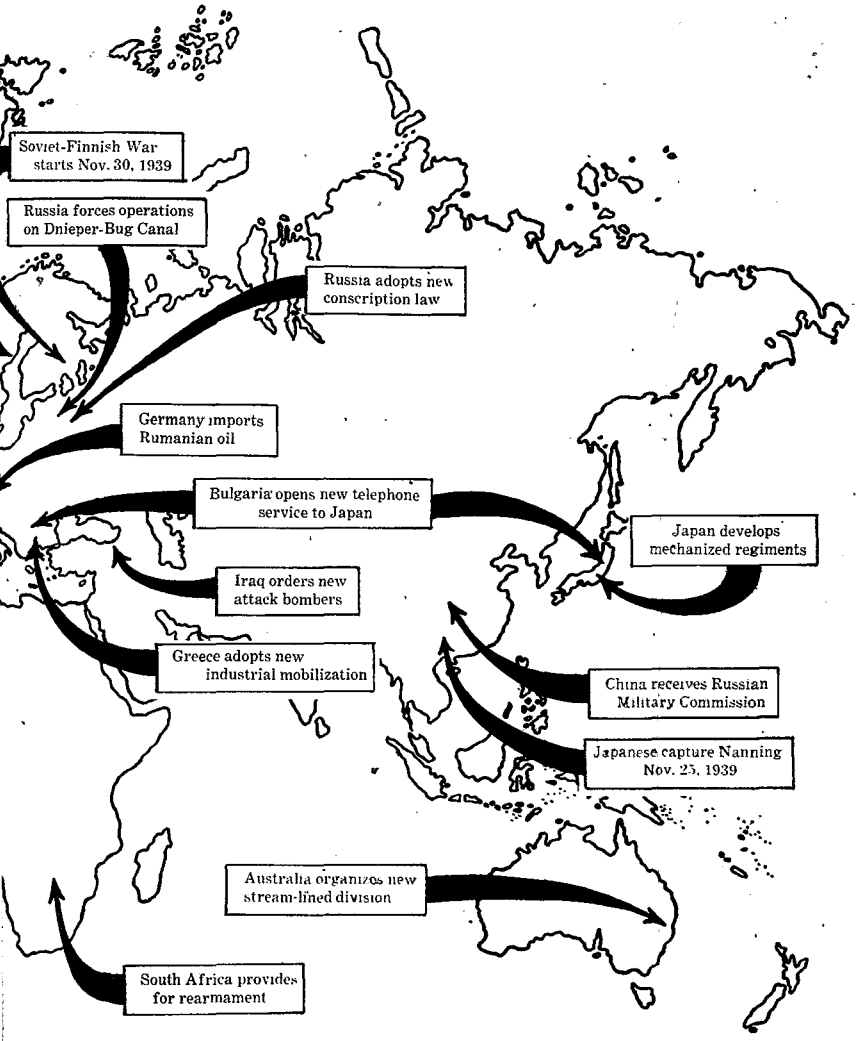
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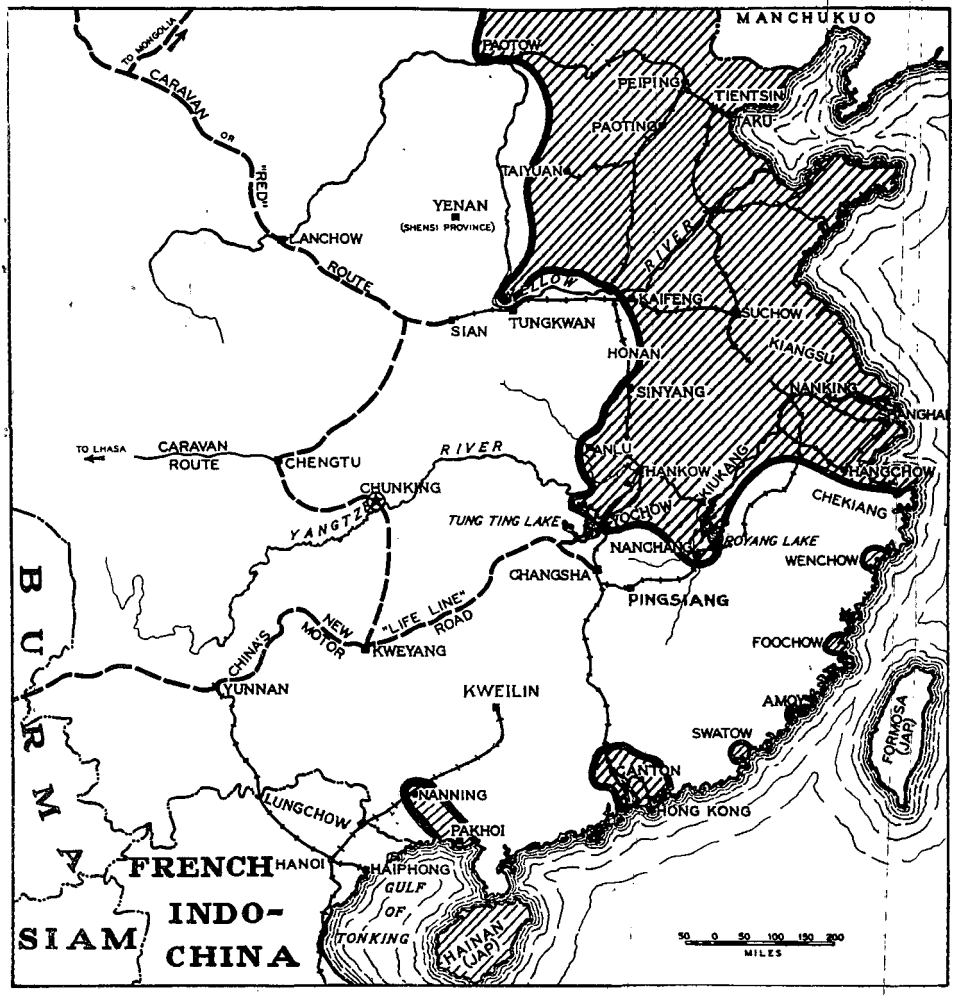
Wide World Photo.

AIRPLANE VIEW OF THE CAMPS OF THE 28TH AND 29TH DIVISIONS, OF THE NATIONAL GUARDS OF PENNSYLVANIA, MARYLAND, VIRGINIA AND THE DISTRICT OF COLUMBIA ON THE CIVIL WAR BATTLEFIELD OF MANASSAS, FIRST ARMY MANEUVERS AUGUST 1939.


Sweden provides for antigas defense
Holland orders barrage balloons
Canada organizes air training schools
Belgium improves antitank defenses
Britain speeds up aircraft production
Switzerland organizes new army corps
Spain signs new trade treaty with France
Nicaragua nationalizes railways
Italy opens new transcontinental air service to Rio de Janeiro
Peru—Callao Port completed
Chile restricts auto imports
Brazil organizes new air transport company
Graf Spee scuttled by German crew (Dec. 17, 1939)


Soviet-Finnish War starts Nov. 30, 1939
Russia forces operations on Dnieper-Bug Canal
Russia adopts new conscription law
Germany imports Rumanian oil
Bulgaria opens new telephone service to Japan
Japan develops mechanized regiments
Iraq orders new attack bombers
Greece adopts new industrial mobilization
China receives Russian Military Commission
Japanese capture Nanning Nov. 25, 1939
Australia organizes new stream-lined division
South Africa provides for rearmament

The Sino-Japanese War



General Situation as of 1 February 1940



Wide World Photo

JAPANESE INFANTRY IN CHINA RUSHING A POSITION WHICH THEIR ARTILLERY HAD REDUCED TO FLAMING RUINS. NOTE THE ABANDONED CHINESE MACHINE-GUN POSITION AT THE RIGHT

The Sino-Japanese War

BY LIEUTENANT COLONEL E. M. BENITEZ, *Coast Artillery Corps*

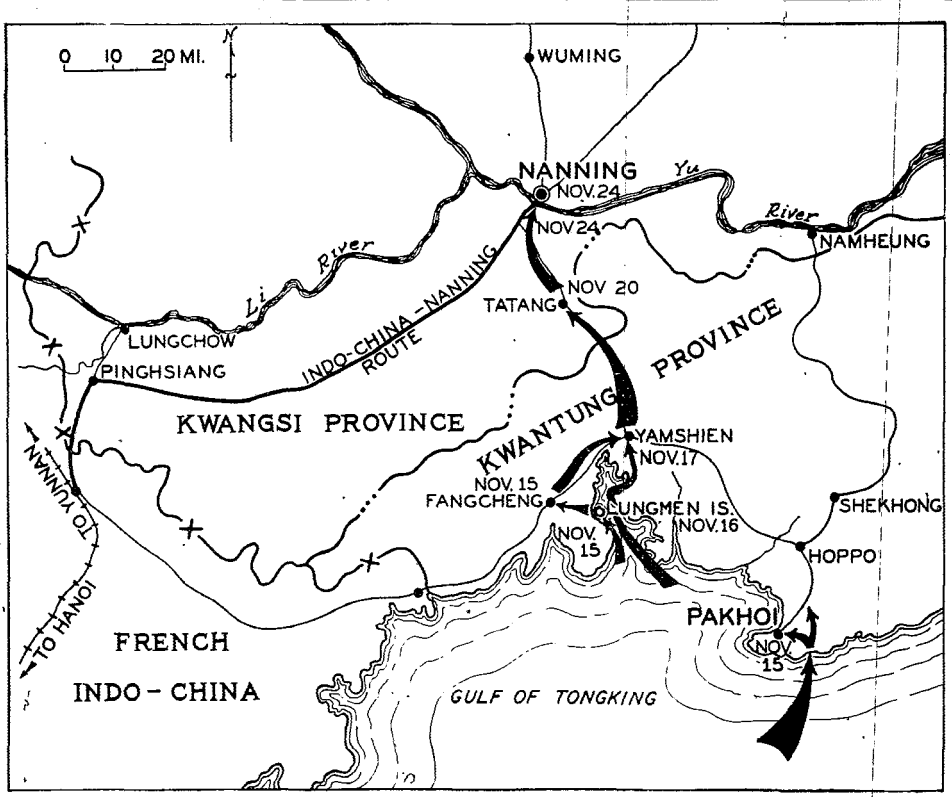
Europe's two wars have monopolized the headlines recently, but the conflict in Asia which has been raging for over two and one-half years and has already taken a toll of over 3,000,000 dead and wounded, is still the fiercest and bloodiest struggle since the great Epic of 1914.

OCCUPATION OF PAKHOI AND NANNING

Early in the morning of 15 November 1939, picked Japanese military and naval units effected a successful surprise landing near Pakhoi, at Lungmen Island, and on the eastern shore of Chinghow Bay, under the protection of the guns of the Japanese Naval Squadron in South China. After cleaning up local resistance, the invaders occupied the port of Pakhoi, and drove inward capturing Fangcheng on the 15th, Yamhshien on the 17th and Nanning on the 24th.

The Chinese claim that their plan never contemplated stiff resistance along the coast where the Japanese enjoyed the great advantage of protection afforded by their naval armament, and that accordingly they withdrew to the north where the mountainous country between Kwantung and Kwansi Provinces offers excellent defensive lines. The ease with which the Japanese occupied Nanning was disappointing to the sympathizers of the Chinese cause; however, the invasion of Kwangsi Province is viewed by the Chinese General Staff as another chance to tie up a considerable enemy force.

Pakhoi was opened to foreign trade in 1876 under the Anglo-Chinese Chefoo Treaty. At that time, its trade prospered, but declined as the local center of commerce was gradually shifted to Haiphong. The city has a population of about 65,000 and the foreign residents number but a mere dozen. Since June 1939, when Swatow and other ports were occupied by the Japanese, Pakhoi's import and export trade suddenly increased as it was practically the only seaport through which Free China received arms, munitions and oil. With the capture of Pakhoi all the important sea-



CAPTURE OF PAKHOI AND NANNING

ports of South China have been either occupied or cut off by the Japanese and the minor ports may be considered either lost or useless. Thus, the latest Japanese operation will tighten the blockade and for the remainder of the war China will have to rely chiefly upon overland communications for provisions of supplies and war materials.

Since the occupation of Nanning, the Japanese forces have engaged in two strong offensive thrusts in South China, both of them designed against the Chinese lines of communication.

The occupation of Nanning cut a Chinese line of supply along the highways from French Indo-China into Kwansi Province. The railway from Indo-China into Yunnan Province, however, lies much further inland. From Nanning, Japanese planes are able to bomb this railroad with greater facility, despite obstacles imposed by distance and high mountains. In fact, this railroad was damaged by raids early in January, leading to a French protest which was rejected by the Japanese authorities. It is doubtful whether bombing raids can entirely cripple this railway, although it may be closed through Japanese pressure on French authorities. The new Burma-Yunnan highway is so far inland as to be virtually impregnable; it can be closed only if Britain succumbs to Japanese pressure.

The second Japanese offensive—northward of Canton—has resulted in a Chinese military victory, as crushing as that registered last fall at Chansha.* These two campaigns bear striking similarities. In both cases, the Japanese forces were seeking to extend their control over the Canton-Hankow Railway. Except for limited areas around Hankow and Canton, Chinese armies hold the intervening 400-mile stretch of this important railway. In September, the Japanese command struck at Changsha and failed; in December the attack was shifted to the southern end of the line. By late December the Japanese forces had advanced 80 to 100 miles from Canton into Kwantung Province. Chinese

*See C&GSS Military Review, December, 1939, page 21.

counterattacks not only halted the advancing Japanese columns, but forced them to retreat and by the middle of January the Chinese forces had fought back to within twenty-five miles of Canton where they are pressing hard on the retreating Japanese troops.

Guerrilla Activities

Chinese guerrillas continue their activities and are proving to be a thorn in the side of the Japanese military machine. In the Shanghai-Nanking-Hanchow triangle, the operations of China's mobile forces continue to make life miserable for the invaders, while fighting is prevalent in every province of occupied China. The Japanese troops are scattered over such a large area and their lines of communication and supply are so extended that, even if the guerrillas may never actually win the war, their hit-and-run tactics are keeping a large number of Japanese troops back from the front lines to guard the supply routes.

Problems of China and Japan

If China is to hold out against Japan for at least another year she must solve two serious problems: the extension and improvement of her inland communications and that of domestic war financing.

The loss of the Lungchow-Nanning Route leaves Free China only the Indo-China-Yunnan Railway, which is to be supplemented by a motor road; the Burma Road, which is being practically doubled by a railroad under construction, and the various northern routes into Russian territory. This is not much, but it might be sufficient for China's transportation requirements if inland communications are further improved. Care and servicing of motor vehicles must be greatly improved; closer cooperation should be established between military and civilian motor services, and profiteering on national through-communication on the part of local and provincial authorities must be abolished.

In regard to finances, it has been estimated that the expenditures of the Chinese National Government amount to approximately $275,000,000 monthly. According to experts, Free China's revenue from taxation, government enterprises and other sources have been somewhat less than $100,000,000 per month, so that about $180,000,000 monthly must be provided for. This amount may be obtained through issues of domestic bonds, foreign credits, donations and similar transactions. So far, the National Government has managed, though precariously, to make both ends meet; but it may be readily seen that China's Finance Minister, Dr. H H. Kung, has a real problem on his hands

Japan, however, is facing a difficult situation as well It is apparent that hope for an overwhelming victory is now fading. The Japanese have not succeeded yet in setting up a central government in China, and have been reluctant to deal directly with Chiang Kai-shek, who is in fact the only authoritative representative of the Chinese people. The efforts of the new Cabinet to deal indirectly with him through Wang Ching-wei, prospective head of the puppet government in China by presenting peace terms to the Chinese Generalissimo through him, will undoubtedly fail, because those peace terms will probably prove to be unacceptable to the Chinese leader. The terms offered are reported to be as follows: Chinese recognition of Manchukuo; North China and Mongolia to be a "special zone for defense and economic development for Japan"; recognition of Japan's economic predominance in the rich lower Yangtze Valley and in islands off China; Japanese garrisons to be maintained in China; reduction of Chinese Army and police forces.

As the war continues the strain on Japanese economy becomes more severe. Since the beginning of the undeclared war in China, over thirty-one months ago, the prices of fuel, clothing and lighting in Japan have increased 90 per cent, despite the drastic measures taken by the Tokyo Government to check the steady upward trend. The failure of the rice crop in certain drought-stricken areas has further complicated a potentially dangerous situation. Leather, which is needed for soldiers' boots and knapsacks, is no longer available to the general public. Shoes are made of toad and snake skins and of synthetic rubber. Under the terms of a decree promulgated last summer, all exportable foodstuff, such as eggs, butter, canned fruits and fish are being rationed for the domestic market. The situation concerning construction materials, fuel and agricultural tools is even more distressing. Gasoline has been rationed for more than a year, and the daily quota is being steadily reduced. The shortage of gasoline has dealt a heavy blow to Japan's important fishing industry Nippon's fishing motor craft today find themselves forced back to sails and human power. There is likewise a shortage of nets and fishing equipment. Agriculture is suffering from a shortage of manpower, which is easily explained by the fact that since the beginning of the China "incident" Japan has mobilized about a million and a quarter men in addition to the 300,000 stationed in Manchuria Most of the soldiers were drawn from agricultural areas This widespread dissatisfaction caused the downfall of the Abe Cabinet on 14 January, the third political crisis in Japan within a year

Puppet Government

For more than a year there have been frequent reports that Wang Ching-wei, who was once Premier under Chiang Kai-shek and deserted him in December 1938, has been about to launch his new Japanese-sponsored Central China regime. Wang's plans have been consistently and strongly opposed by the Peiping "provisional" government and by the Nanking "reformed" government, the two Japanese puppet regimes now functioning in China. In order to eliminate this regional opposition, Lieutenant General Juzo Nishio has been appointed commander-in-chief of all Japanese forces in China. One of the main purposes of the unified command is to facilitate Japan's installation of Wang Ching-wei in Nanking as the president, premier or leader of that portion of China occupied by Japanese troops. Japan realizes that China will have to be ruled through puppet governments as she is too large to be ruled by an army of occupation.

Comments

Will this war that has brought so much destruction, misery, and loss of life, last another year? This question has been asked in the past; first, after the fall of Nanking and more recently after the Nipponese capture of Canton

and Hankow. Observers believe that the year 1940 will bring serious economic and financial difficulties to China; but indications are that they will be overcome as they have been overcome in the past and that China will continue fighting with determination to the bitter end. China's resistance is far from disintegrating, as proven by the fact that there has been recent fighting in all twelve provinces of occupied China and that in spite of the terrific air bombardments, the Chinese are still able not only to put up considerable resistance everywhere, but even to take the offensive, as they have done at Changsha, north of Canton and in Central China. Free China's continued vitality illuminates the weakness of the Japanese position and it is not surprising that the Japanese leaders now realize the magnitude of their task and are beginning to show a sincere desire to put an early termination to this conflict which is sapping Japan's wealth and manpower.

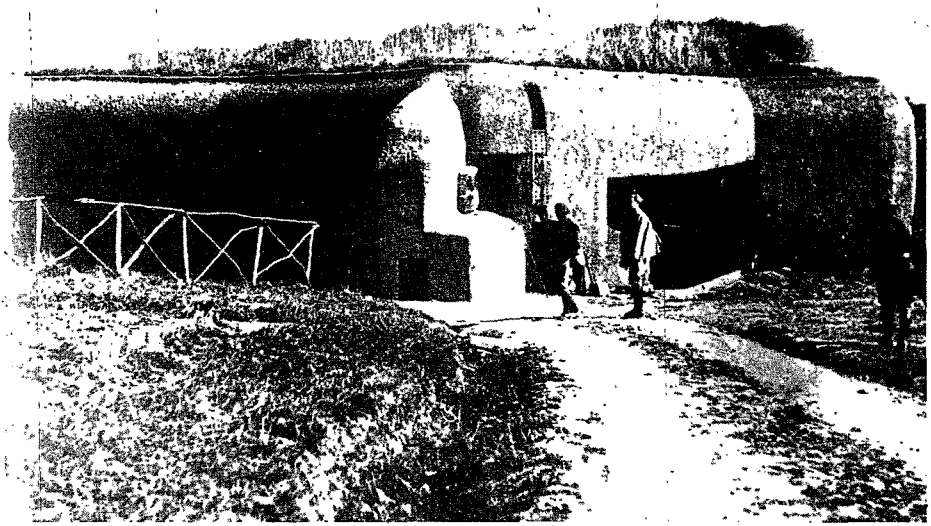
The Japanese adventure in China commenced as an "incident," but is taking on the aspect of a national calamity. Japan's forces are bogged in China, while at home the gold reserves have been depleted and her war potential greatly impaired. It is the task of the military leaders to extricate themselves from this situation, either by establishing puppet governments or by direct peace negotiations with Chiang Kai-shek. Either alternative presents difficulties, and the successful solution of a problem upon which the life and prosperity of the Japanese Empire depends, appears to be beyond their grasp. The destinies of Japan and China are at present firmly harnessed to the chariots of war.

* * * * * * *

No war plan extends beyond the first military engagement with the hostile main forces. Only the layman believes that the course of the campaign has followed a predetermined course, which has been planned in detail far in advance, and has been clung to tenaciously to the bitter end.

—MOLTKE (the elder).

The opponent usually does not assume the role he has been expected to play.—von Schlieffen.



A FRENCH FORT, PART OF THE MAGINOT LINE. THIS PICTURE WAS PASSED BY THE FRENCH CENSOR

Wide World Photo

The European Wars

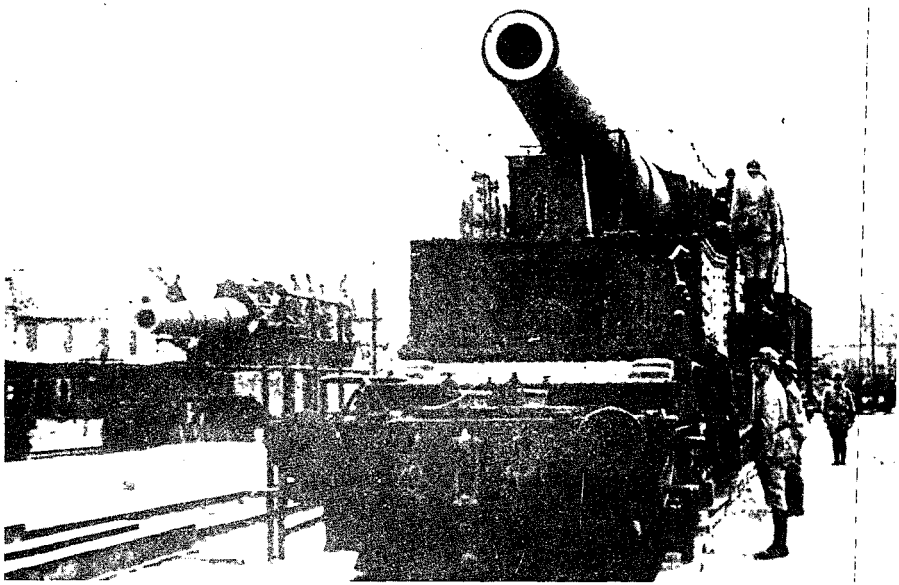
I—THE WESTERN FRONT

BY LIEUTENANT COLONEL E. M. BENITEZ, *Coast Artillery Corps*

The operations of this war have, up to the present time, been confined chiefly to air raids, intensive mining and submarine warfare. A false alarm, similar to the one that was prevalent last November, caused acute tension in Belgium and Holland in January, due to the reported increase of German troop concentrations well equipped with artillery, airplanes and tanks, along the frontiers of those two countries but the feared attack failed to materialize.

In order to understand events at the Western Front, especially the warfare of patrols and raids which is now developing, it is necessary to put aside memories of the Great War of 1914-1918, particularly those of the period of trench warfare. The struggle between the Maginot and the Siegfried Lines is a war of position, but it differs in some respects from the front-line operations of the World War. The following abstract from an article published in the Gazette de Lausanne (Switzerland) 15 October 1939, gives an idea of the type of warfare now being waged on the Western Front.

"What strikes the veteran of 1914-1918 most, if he has occasion to visit the firing line of 1939, is the emptiness of the battlefield, and the great dispersion of troops as he nears the front lines. These front lines are covered by outposts, each one occupied by a mere handful of soldiers manning one or two automatic weapons. The flanking groups are often more than 300 yards to the right or left. Behind these outposts there are additional positions which are closer to each other. Instead of having continuous lines of fortifications facing each other and sometimes separated by only 50 yards, as in 1914-1918, the opposing positions are today echelonned in depth with flexible and powerful dispositions. Individuals are no longer elbow to elbow in the trenches, as formerly, but are deployed in numerous small detachments. It is the



FRENCH ARMY HEAVY ARTILLERY —340-MM PIECE SOMEWHERE NEAR THE FRENCH FRONT. THIS PICTURE WAS PASSED BY THE FRENCH CENSOR

Wide World Photo

extraordinary increase, since the last war, of the number of automatic weapons in the infantry that permits this dispersion of troops. Thanks to it, a company today has firepower superior even to that of a former battalion. These advance posts protect themselves mutually by flanking fire covering a considerable area. 'No man's land' is much broader than in the last war. At some points, it is more than one or two miles wide. It is consequently an ideal field of action for opposing patrols or reconnaissance groups, which have become extremely active since the halt of the French advance after the first two weeks of September. Because of the great extent of 'No man's land,' this patrol activity in advance of the line of outposts has led to a form of warfare which, although not unknown, never before was used on so large a scale—that is, mine warfare."

The most important question that is being debated today is what action will be taken by Germany in the spring, when the fogs clear and weather conditions become favorable for large scale operations. Three lines of actions are possible:

1. Hitler may choose to consolidate his conquest of Austria, Czechoslavakia and Poland and let the British and the French take the offensive if they care to do so. He may thus save foodstuffs, petroleum and raw materials and be able to defy the Allied blockade for at least two years.

2. A plunge through the Maginot Line. General Duval, who commanded the French Air Force during the World War, believes that Hitler will attack in the spring, and that he will attack straight and hard through the Maginot Line instead of around the flanks. He maintains that the Schlieffen Plan is based upon the element of surprise and that today the Dutch, Belgians and Swiss are very much on the alert. Moreover, the Maginot Line cannot be outflanked because since last September it has been extended to reach the English Channel in the north and the Jura mountains in the south.

3. The majority of French military experts believe that the Schlieffen Plan, requiring a flanking movement through Belgium or through the Netherlands and then southward into Belgium, is still the best method of invading France. It is a common belief that even a thrust involving the loss of a million lives will fail to make an appreciable dent in the Maginot Line.

THE PROBLEMS BEFORE GERMANY AND FRANCE AND GREAT BRITAIN

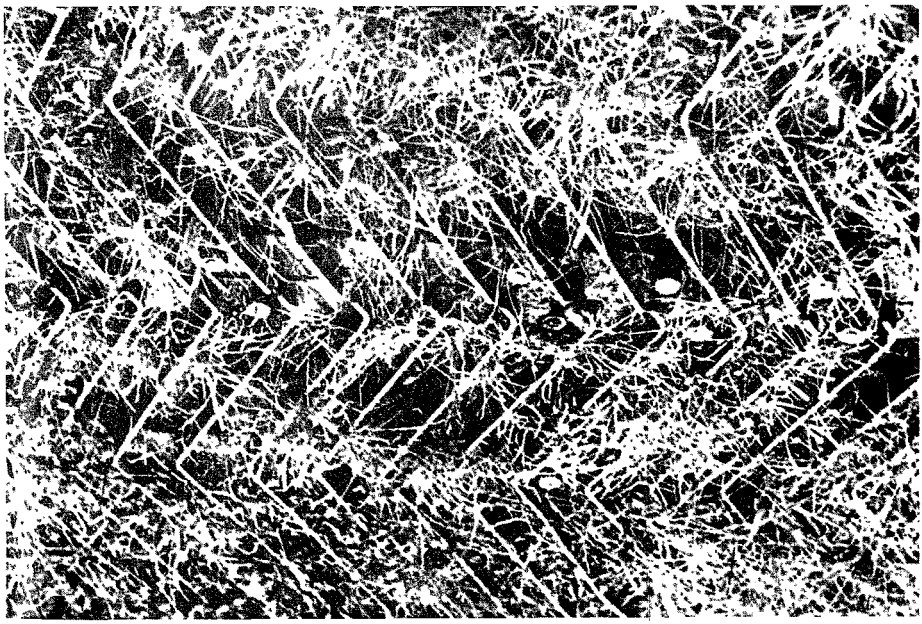
In 1914, the German General Staff had everything in their favor; the surprise of numbers, due to the incorporation of reserve units in the fighting line; the surprise of direction, secured by the invasion of Belgium; the absence of

any fortified positions to check them, once Liege, Namur and Maubauge had been outrun, and the fatal error of the French Offensive in Lorraine under the famous Plan XVII. Today, the French Army, more than equal to the German army in the *number* of reserves and unexcelled in *quality*, is waiting for the attack on the Maginot Line, considered the most impregnable defensive system yet devised by human ingenuity. In 1914, the British relied wholly on voluntary enlistment, and it was not until after the opening series of French and Belgian disasters, that the need of employing large British forces on the continent became apparent. In 1939, conscription was immediately adopted, and unity of command, which took four years to achieve in the World War, was accepted from the outset.

On the other hand, many experts believe that blockade alone will never bring Germany's collapse, although economic measures will play an important part in this great struggle.

The fear in 1939 that the war would start with devastation and massacre from the air, seemed warranted by the examples of Spain, China and Poland. Military observers are puzzled and in vain try to guess what form this conflict will take. Their opinions agree on one respect, namely, that there will be intensive fighting with the coming of the spring, the result of which may decide the outcome of this war.

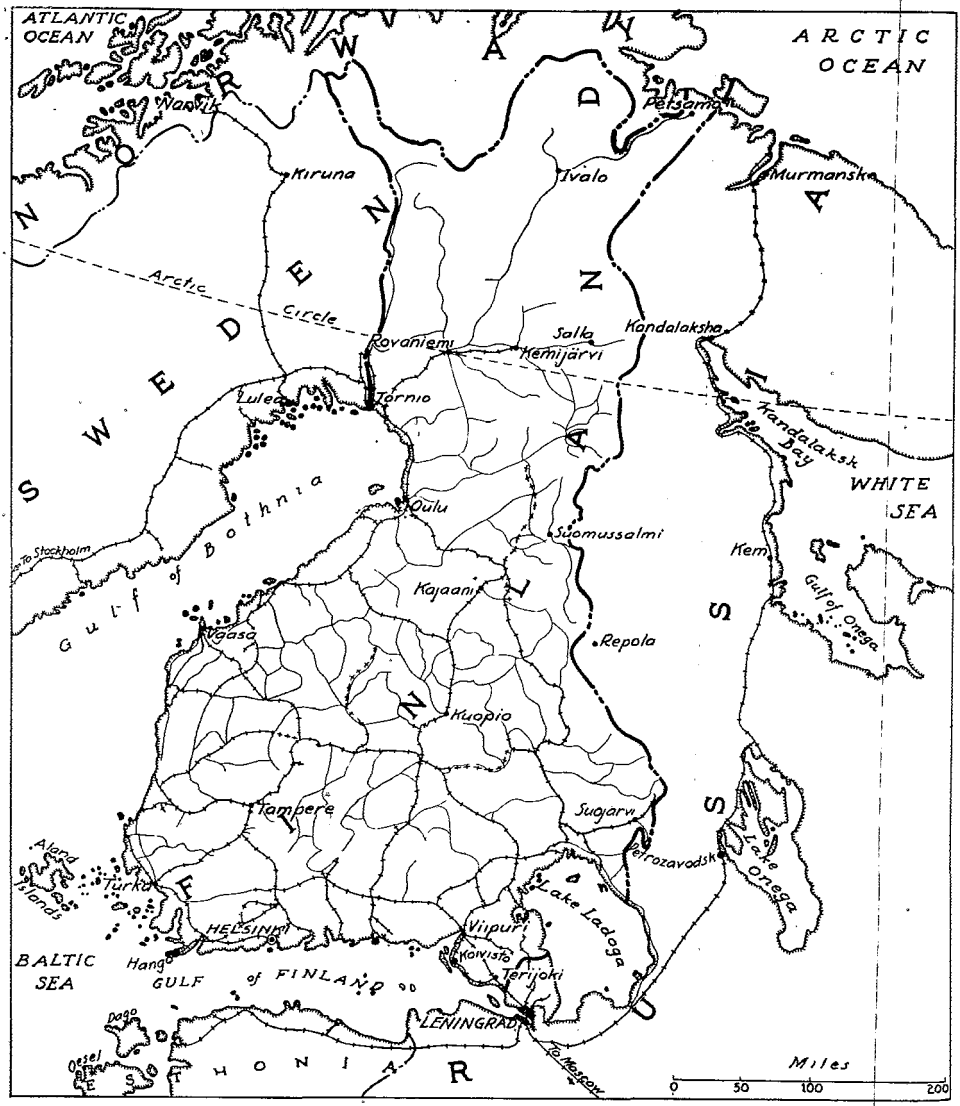
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Wide World Photo

CLOSE-UP OF THE STEEL NETWORK OVER THE RUN-WAYS ON A SECRET BRITISH AIR BASE SOMEWHERE IN NORTHERN FRANCE.

THE STEEL SUPPORTS PREVENTS THE PLANE WHEELS FROM BEING BOGGED DOWN AND THE GRASS FORMS AN EFFECTIVE CAMOUFLAGE. THIS EXPERIMENTAL DEVICE HAS BEEN FOUND SATISFACTORY WHERE THE SUB-SURFACE IS HARD. PICTURE PASSED BY THE BRITISH CENSOR.



MAP No. 1

GENERAL MAP OF FINLAND SHOWING THE EXCELLENT RAILWAY AND ROAD NET IN THE SOUTHERN HALF OF THE COUNTRY. OMITTED ARE THE NUMEROUS LAKES WHICH DOT THIS SECTOR



A FINNISH VILLAGE IN THE KARELIA DISTRICT WHERE HEAVY FIGHTING OF THE SOVIET-FINNISH WAR HAS TAKEN PLACE *Wide World Photo*

II—SOVIET-FINNISH WAR

BY CAPTAIN M. R. KAMMERER, *Infantry*

On 1 September 1939, the armed forces of Germany launched a "blitzkrieg" which, following an eighteen-day campaign, found Poland added to that list of nations which, in recent years, have lost their freedom. Three months later the world wondered if another small European nation was about to join the ranks of the "has-beens," for on 30 November 1939 the armed forces of Russia in an attempted repetition of the German campaign in Poland, attacked Finland.

But Russia, endeavoring to follow the details of procedure of a blitzkrieg, as exemplified so successfully by the Germans in Poland, forgot that Finland is a vast forest, traversed only by narrow, muddy roads which offer constant obstacles to motorized troops. In winter, with deep snow covering the country, the rapid advance of tanks and motorized troops—a blitzkrieg—is a patent impossibility..

In both campaigns, the opening step was the attack and bombardment by airplanes of hostile installations in the interior. These installations included communications, railroads, arsenals, bridges and other areas of military importance. Coordinated with this aerial attack was the bombardment of border fortifications by artillery as well as by airplanes. While fortified zones were being bombed and while activity behind these zones was being crippled by aerial attacks, troops moved into weakly defended areas in

an attempt to envelop, outflank, or encircle the main hostile forces.

The careful execution of such a plan by any nation rich in manpower and matériel would prove successful against four out of five nations of the world today. And a comparison of the resources of Finland and the U.S.S.R. would seem to indicate overwhelming chances of immediate success for the U.S.S.R. in such an undertaking against Finland.

Finnish Resources and Strategy

The regular army in Finland, in time of peace, consists of approximately 33,000 officers and men, distributed among 9 infantry regiments, 2 cavalry regiments, 4 field artillery and 3 coast artillery regiments and 1 antiaircraft regiment.

This small force, upon mobilization, was expanded into three corps of two divisions each, totalling about 127,000 men. These constituted the first line troops all of whom had had at least *one* year of compulsory military training

Six additional reserve divisions of approximately 100,000 men were also mobilized.

Finland also has available, in time of war, a Civic Guard. This Guard, estimated at 100,000, consists of locally organized militia units which drill and maneuver at regular intervals. They are charged with maintaining order, and, in time of war, with the defense of the country. It was these units that held up the Russian advances in northern Finland in the initial stages of the present war.

If we add to the foregoing the naval units, customs officials, the Frontier Guard, the forest guards, and the local police, Finland's defensive manpower approaches 340,000, all controlled by the National Defense Council.

Mention should be made of the "Lotta Svard" organization, affiliated with the Civic Guard. It is a women's organization of about 72,000 members. Subsidized by the National Defense Ministry, it is responsible for the health services, military administration, and the defense against gas and air attacks. It has performed meritorious service already in the present war.

At the outbreak of hostilities, President Kallio of Finland delegated his powers of Commander in Chief to General Carl Gustaf Emil Mannerheim. General Mannerheim was, at that time, president of the National Defense Council. As an officer in the Russian army he had seen service in the Russo-Japanese War and in the World War as Lieutenant General. He it was who commanded the White Finns against the Reds in 1918 and who, with German help, gained for the Finns their independence from Russia. As the head of the National Defense Council he was largely responsible for the development of the fortifications, bearing his name, across the Karelian Isthmus, between the Gulf of Finland and Lake Ladoga.

Finland's topography and climate play an important rôle in her defensive operations.

Finland's chief natural feature is her 40,000 lakes, which extend like a network over a large portion of the surface, particularly in the southern half. Numerous rivers and 24 canals connecting these lakes give Finland an inland communication system which, when not frozen, supplements its efficient railroad system

Seventy-five per cent of the country is covered by forests which furnish most of Finland's wealth. In most places these forests are extremely dense. Adding to this surface the 11 per cent of the surface covered by lakes leaves very little room for the maneuver of military forces of any size.

During November in the north and December in the south the Finnish lakes freeze and snow appears. The spring thaws arrive in April whereupon the snow and ice melt rapidly, and all transportation is limited to the roads.

Most of Finland's industry is concentrated in the southern half of the country and over 95 per cent of its population resides in this area. It is only natural then that Finnish strategic plans should concentrate on the defense of this area (to the neglect of the northern half of the country), with an effort to keep open the railroad running along the eastern and northern shores of the Gulf of Bothnia into Sweden.

A study of Map No. 1, reveals the effectiveness of the railroad and road system developed in this important southern half of Finland Troops and supplies can be quickly moved in any direction to any threatened front from any military center. As a result, frontiers can be lightly defended by local militia units while regular units are held in readiness in the interior for a movement to those areas where the enemy threat is most dangerous.

This was essentially the plan for Finland's defense. Of the three regular army corps, one was sent with a Reserve Corps to defend the Mannerheim line where a major blow was expected, one was held at Viipuri ready to move to the eastern frontier, and the third, concentrated in the south near Helsinki, was prepared to move either to the north or to the reinforcement of the other two corps.

Russian Resources and Strategy

That the resources and manpower of the U.S.S.R. are enormous is well known to all. Estimates have placed the total of her military manpower as high as 18,000,000 men, more than four times Finland's population. This figure is considerably exaggerated, however, and it is more likely that 9,000,000 is a closer estimate of the number of men who have had military training.

The active peacetime army consists of 130 divisions of about 10,000 men each. These divisions, highly mechanized, are scattered throughout the 17 military districts into which Russia (including Siberia) is divided. Naturally the majority of these are concentrated along Russia's western frontiers.

At the outbreak of hostilities the conduct of the Russian campaign against Finland was delegated to the chief of the Leningrad Military District, General K. A. Meretskov.. He had available 25 regular divisions, slightly expanded above peacetime strength, and 15 of these were in action during the first week of the campaign.

In theory each of these divisions had 60 light field guns, 15 heavy guns, 40 tanks, 100 armored cars and 20 aircraft.

What these divisions did not have were the roads for movement of themselves and of supplies—except on the Karelian Isthmus. Access to any other point on the Finnish frontier is difficult. A single railroad, 845 miles in length, is the principal line of communication from the base at Leningrad to the most distant point of attack at Murmansk Furthermore, with the exception of the last 165 miles (Kandalaksha to Murmansk), this road is single-track. Two trainloads per day are necessary in modern war for the sup-

plying of each division. It is thus evident that not many troops could be launched against Finland along her northern frontier.

Furthermore, there are only a few second-class roads between the Finnish frontier and the more important towns on this railroad: Petrozavodsk, Kem, Kandalaksha, and Murmansk, from which the Russians had to operate. The distance of these towns from the border varies from 50 to 150 miles.

The plan of the Russian board of strategy called for attacks on Finland's northern and eastern frontiers from as many points along the Leningrad-Murmansk railroad as could stand troop concentrations and in such force as could be transported and supplied by this railroad. These attacks, of a secondary nature, would attempt to cut across Finland's 135-mile waist-line and capture Oulu on the Gulf of Bothnia. At the same time they would draw Finnish forces away from the southeastern frontiers where the main attack would be launched with Viipuri and other southern cities as objectives. A naval and aerial blockade of the Gulf of Finland, along with aerial bombardment of Finnish railroads and concentrations completes a plan which has most of the salient features of Germany's attack on Poland.

The blockade of the Gulf of Finland had little opposition from Finland's navy of 18 vessels some of which are in Lake Ladoga. Her coast defenses and mines did, however, cripple 3 Russian destroyers, 2 submarines and a number of auxiliary vessels in addition to inflicting heavy damage on the battleship *October Revolution*.

The bombardment of communications and concentrations by Russian aviators was less successful than that of the Germans in Poland. Military objectives were seldom hit. The Russian planes operated from both Russian bases and from Esthonian treaty bases.

One of the Finns' chief weaknesses thus far has been her lack of air equipment. Having only 150 planes when the undeclared war began on 30 November, her aviators have shown considerable ability in their struggle against a nation whose air force possesses at least 3,000 first-class ships and approximately 7,000 more of inferior quality.

As a result, Russia's bombers have been active whenever weather would permit, chiefly in the southern areas and over coastal towns.

Attempts have been made by the Russians to drop parachute troops. These troops failed miserably. If they were not shot while descending, they were massacred before they could form a united front.

In discussing the land operations it is deemed advisable, for the sake of clarity, to proceed by sectors, starting at the Karelian Isthmus and proceeding northward.

Karelian Isthmus

The morning of 30 November 1939, as Russian airplanes flew across the Gulf of Finland to bomb Hango, Helsinki, and Viipuri, an estimated eight Russian divisions (including three in reserve) moved through the Karelian Isthmus, crossed the Finnish border and started to advance on the Mannerheim line. (See Map No. 2)

This line of fortifications, at the western end, is based on the town of Koivisto about 20 miles south of Viipuri. From that point the line runs generally east-northeast through Summa to Lake Ladoga taking maximum advantage of the natural defenses furnished by Lake Suvanto and its outlet into Lake Ladoga, the Taipale River. The use of the word "line," in speaking of these defenses, is misleading, for the Mannerheim line, like the Siegfried line in western Germany, is a system of fortified centers of resistance, arranged in depth.

There are several explanations for an attack by Russia through this Isthmus. Ground needed to be gained in this immediate area to keep the Finns away from Leningrad, 20 miles from the border, the second largest city in Russia, and the terminus of the railroad upon which are dependent all forces engaged in the campaign against Finland. An advance at this point also gave Russia a chance to set up on Finnish territory a puppet "Finnish People's Government." This was done on 1 December 1939 at the insignificant village of Terijoki a few miles inside Finnish territory.

A very important reason for attacking through the Karelian Isthmus was that, transportation and supply considered, it was the shortest and easiest route (despite fortifications) to their objectives—the southern cities and towns where Finland's power and wealth were found.

General Mannerheim held his III Corps of regulars ready for the thrust in this sector, but used reserve units in the actual defense of the fortifications on the Isthmus.

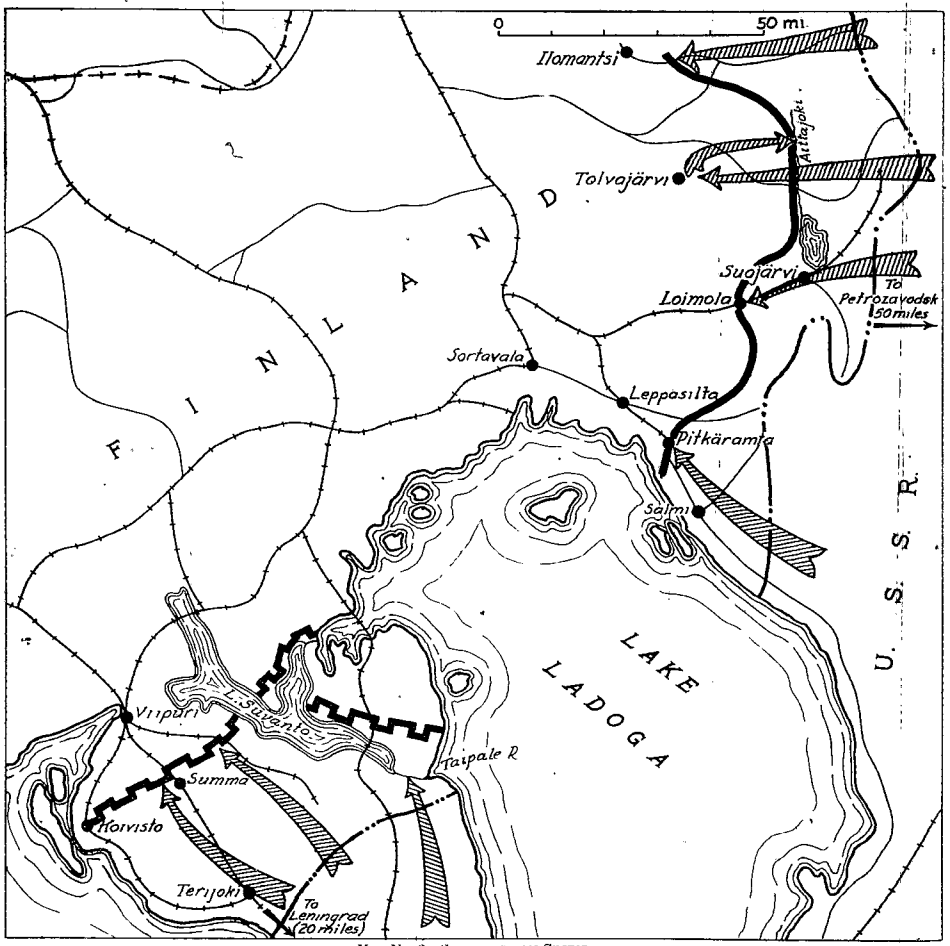
These units had no intention, however, of permitting without opposition a Russian advance to even the most forward elements of their fortifications. When the Reds started their advance the morning of 30 November 1939 they found themselves forced, as a result of Finnish demolitions in the lake regions, into narrow corridors, trapped with mines, studded with barriers, and covered by machine guns and antitank guns The result was slow progress accompanied by heavy losses in personnel and in tanks. Overpowered by both personnel and matériel, the Finns, intent on sacrificing as few men as possible, withdrew gradually to occupy, at the end of a week's fighting, the advanced posts of their fortified zone.

Reinforced by the reserve divisions, the Russians, during the second week, struck at the flanks of the Mannerheim line without success, and with considerable casualties. By 20 December, 17 Russian divisions were reported to be concentrated at the Karelian Isthmus, although it is probable that this included the five divisions that had suffered heavily in casualties and been withdrawn after the first week of the campaign.

During December the main efforts of the Russians were directed at the eastern end of the Mannerheim line where Lake Suvanto and the Taipale River furnished the necessary means of defense to the Finns.

It was not until the end of the month that the Russians, after many suicidal attempts to turn the Finns' left flank, began a concentration of fresh troops opposite their right wing in an apparent effort to break through to Viipuri. This force was drawn from various military districts and included many tanks and much heavy artillery.

Numerous attacks were launched along the entire line, particularly on the left flank. Slight advances were made, but casualties continued to mount and many tanks were destroyed or crippled. Artillery bombardments concen-



MAP NO 2—SOUTHEASTERN SECTOR

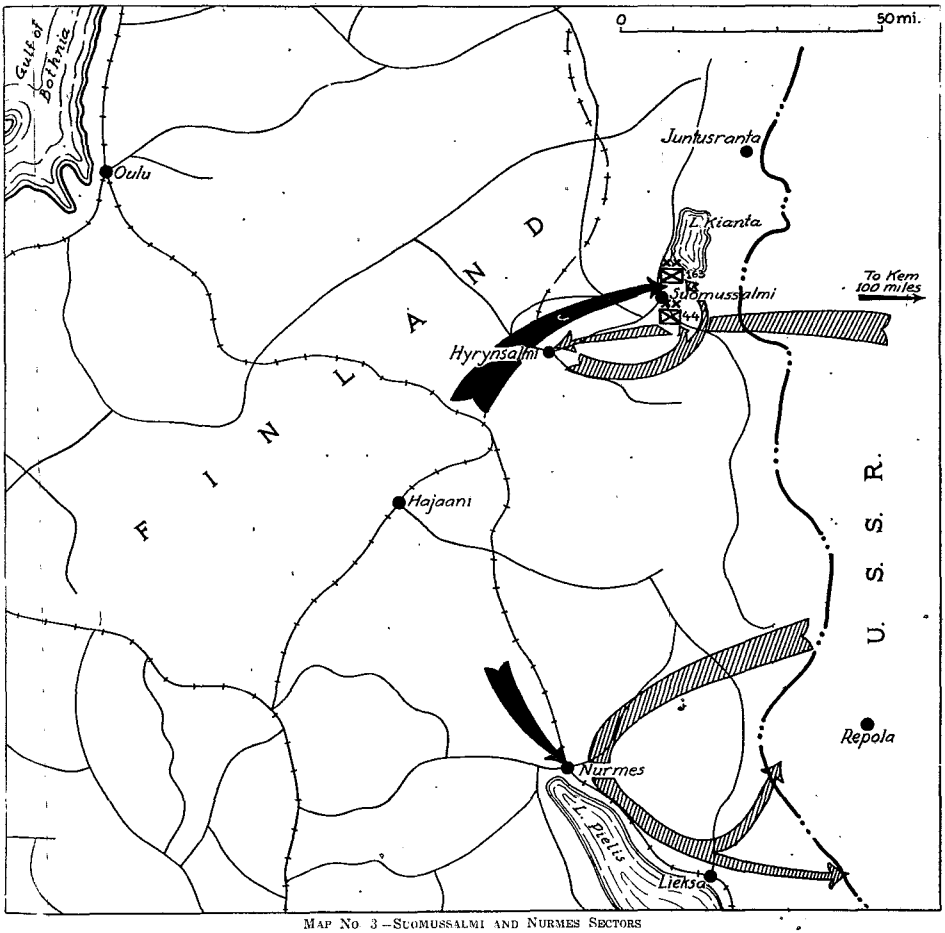
trated on the fortifications as well as on Viipuri, 25 miles behind the line

Severe cold weather in mid-January caused a lull in activities. The Russians took advantage of this occasion to consolidate their positions, and reorganize for a new attack at the Mannerheim line which, at the end of January, rests intact with two corps of Finnish troops awaiting further Russian onslaughts. It is estimated that 200,000 Russians are concentrated on the Karelian Isthmus.

LAKE LADOGA

To the north of Lake Ladoga, in an attempt at cooperation with the forces attacking the Mannerheim line and in an effort to outflank its defenses, two of the four Russian divisions, operating out of Petrozavodsk, crossed the frontier and moved on Salmi and Suojarvi. (See Map No. 2.) Between Salmi, on the lake, and Suojärvi, about 50 miles to the northeast, the Finns have a line of fortifications consisting chiefly of scattered pillboxes and blockhouses.

Data as to the strength of the Finns opposing the Russian threat in this area has been misleading. However in view of the importance of preventing an advance around the lake, of keeping the railroad through Sortavala open, it is believed that the II Corps was directed to that area to reinforce the reserve units that were being pushed back by the Red divisions.



MAP NO 3—SUOMUSSALMI AND NURMES SECTORS

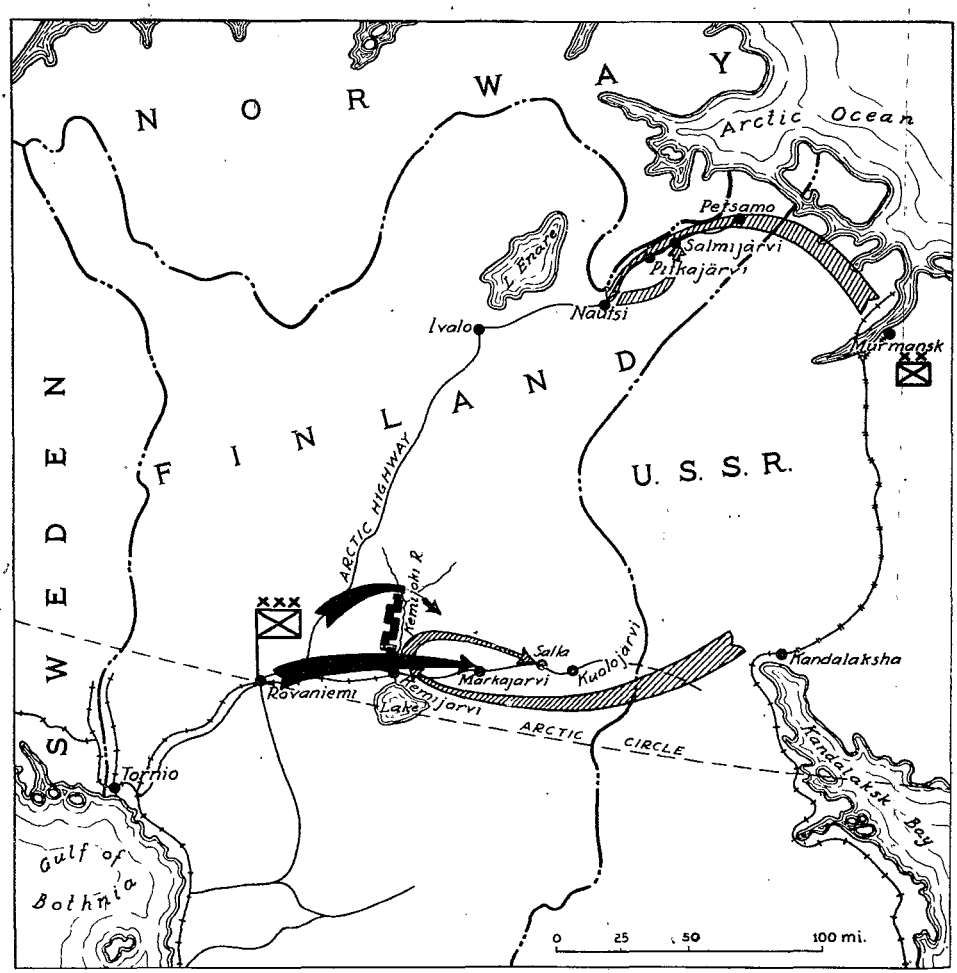
The Russian divisions on the right had, before running into such resistance, succeeded in penetrating as far as Tolvajarvi. At this point some of the fiercest fighting of the war took place. The Finns were able to regain the Tolvajarvi sector on 13 December after practically destroying an entire Russian division. They pursued the Russians to the Aittajoki River which line they have been able to defend against repeated Russian attacks.

The second Russian threat of importance in this area was made along Lake Ladoga. They pushed to Salmi on 4 December and by the 11th had reached Leppasilta. All attempts to advance further than that were repulsed by the Finns.

Between these two main thrusts by the Russians, numerous attacks of little importance were made particularly in the vicinity of Loimola.

Early in January the Finns were holding the line: Pitkaranta—Loimola—Aittajoki—Ilomantsi. At this time the Russians started moving reinforcements (the other two divisions from Petrozavodsk) up to the line. Hundreds of tanks and armored cars were concentrated in this sector, to support attacks which were made daily at many points along the 80-mile front.

Deep salients were created, and the mobile Finnish reserves, moving to the flank of these salients, wrought un-



MAP No 4—SALLA AND PETSAMO SECTORS

believable destruction in the waves of solidly packed Russian infantry

CENTRAL FRONT

Suomussalmi and Nurmes

It has been generally believed that, by cutting Finland in two at the waist, Russia could bring her campaign against Finland to a rapid conclusion. That both Russians and Finns failed to conceive of such a step as of great strategic importance may be gathered from the weakness of the Russian effort and from the relatively few number of Finns sent to that sector.

Three Russian divisions were reported operating out of Kem on the Murmansk railroad as a base.. Two of these divisions reached Suomussalmi on 8 December 1939. (See Map No. 3.) Four days later, this force, subbornly opposed by militia units and finding advance difficult in the heavily wooded terrain had advanced 20 miles westward to Hyrynsalmi. Here they were met by one division of Finns sent from the II Corps which was north of Lake Ladoga. This division counterattacked and drove the Red divisions back to Suomussalmi and Lake Kianta where they succeeded in making a penetration between the Russian 44th and 163d Divisions. While small detachments were making demon-

strations against the 44th Division on the right, the bulk of the Finnish forces attacked and drove the 163d Division out northeastward onto the frozen lake where it was cut to pieces, 30 December 1939. The remnants retired to Juntusranta.

The Finns then proceeded to the destruction of the 44th Division which had remained inactive during the preceding battle. Troops pursuing the 163d Division had been able to encircle the 44th Division, cut off its communications, and blow up bridges on its line of retreat. An envelopment by the Finns of the enemy right flank put the Russians to rout 7 January 1940.

The tactics of the Russians at Suomussalmi recall to mind their defeat by Hindenburg at Tannenberg in August 1914. In both battles the Russian forces, after initial successes that might have been followed up to great advantage, allowed themselves to be split in two. In each case the opposing commanders took advantage of this situation to defeat first one and then the other of the divided armies.

Following the defeat of the two Russian divisions, Finnish forces pushed on, routed reinforcements arriving too late to help the scattered divisions, and having cleared all Russians out of that area, were, at last reports, holding the line of the frontier.

Minor engagements on this eastern front have taken place in the vicinity of Nurmes, about 100 miles south of Suomussalmi. A small Russian force, apparently a part of the third Russian division at Kem and probably not larger than a regiment, reached Nurmes on 2 December. The Finns drove this force southeast to Lieksa where one battalion of Reds was destroyed 20 December. By the end of the year the Finns had cleared this area of Russian troops and were operating across the border in Russian territory on the roads out of Lieksa.

The Salla Sector

Along the Arctic circle a fourth Russian column made an invasion of Finnish territory. (See Map No. 4.) The size of the original force has not been determined, although it was not more than a division. It was opposed by units of the Civic Guard, all good skiers and well trained and equipped for winter warfare. They were unable, however, to stop the advance of the Russian column which seized Kuolojarvi 4 December 1939, pushed on through Salla; occupied Markajarvi 15 December, and a few days later were threatening Kemijarvi, northernmost terminus of Finnish railroads.

The Kemijoki, a river running north from the town, gave the Finns a good natural defensive position, one which they could have held against overwhelming numbers, and along this line they were prepared to defend.

The arrival of one division from the I Corps, which General Mannerheim had been holding as a strategic reserve, changed the situation materially. The Russians, 150 miles from their base at Kandalaksha, and low on supplies as a result of the activities of Finnish ski troops along their lines of communication and supplies were forced to fall back 19 December. They finally took up positions in the vicinity of Salla.

Minor engagements took place in the vicinity of Salla from 1 January 1940 until the middle of the month when Russian reinforcements were beginning to arrive. These forces succeeded in advancing their front line to Markajärvi.

The Russian penetration to Kemijärvi was their most serious threat to the Finns' railroad communications with Sweden, the only country through which supplies can reach Finland. The Finns apparently had not expected an attack in this difficult country, and the Russians likewise expected little opposition for there were fewer tanks concentrated here than elsewhere.

In command of the Finnish operations in the north around Salla is the young energetic Major General Martii Wallenius who, in 1932, was tried for leading a Fascist revolt against the democratic government of Finland. His 3-year sentence was suspended, and he has been taken back in the army. His headquarters are at Rovaniemi, although he is seldom there, preferring to obtain first-hand information of the situation by personal reconnaissances of the front lines.

Arctic Front

In the far north, the Russians had concentrated one division at Murmansk, railroad terminus on the Arctic Ocean. Here, as at Salla, the only Finnish troops available for initial defense were the Civic Guard. On 30 November 1939 the Russians moved across the border. The next day, assisted by severe aerial bombardment, they seized Petsamo. The Finns fought stubbornly and claimed to have recaptured the town the following day, 2 December 1939. This success was short-lived, however, and they withdrew the next day.

By the middle of the month, the mechanized Russian force had pushed the Finns south of Salmijarvi, where the rich nickel mines are located. It was here, at Salmijärvi, that the Russians had made their first attempt, a futile one, to drop parachute troops, 3 December. On 18 December the Russians were at Pitkajarvi, and 5 days later they were at Nautsi, 65 miles from Petsamo and over 125 miles from their base at Murmansk.

Once again the Russians found that their supply system was inadequate. The only road in the far north is the Arctic Highway between Petsamo and Rovaniemi, railroad town on the Arctic circle. The Russians fell back to Salmijarvi with advanced elements located in the vicinity of Pitkajarvi. The extremely cold weather has limited operations in this area to reconnaissance patrols.

Comments and Conclusion

The success to date of the Finnish operations can be attributed largely to their intense study of the art of war applied to their country. The importance of a thorough knowledge of the terrain has been illustrated, and the plan of leaving the conduct of operations in a particular sector to the inhabitants of that sector has been fully justified. The local Civic Guard units have had both the incentive to protect their own homes and the advantage of having drilled and maneuvered in the very localities where they are fighting.

General Mannerheim's instructions to troops operating in the north country were: "Hit them in the stomach." These instructions were carried out by the simple process of avoiding any serious engagement, of permitting the

Russians to stretch their lines of communications and supplies to the limit, and then leisurely working small patrols around the flanks to cut those lines. These tactics, aided by a climate to which the Russians were not accustomed, have been successful on the three nothernmost fronts,—Petsamo, Salla, and Suomussalmi.

In their observance of the principle of mobility, strategic or tactical, the operations of the Finns and of the Russians have shown marked differences. Thanks to their excellent interior lines, the Finns have been able to move reinforcements from one point to another as, and if, required. As previously stated, the Russians have been dependent upon a single-track railroad for most of their movements of troops and supplies, with the result that their strategic mobility has been reduced to nil.

This lack of strategic mobility might have been compensated for by maintaining some semblance of tactical mobility, i.e., mobility of troops in contact with enemy forces. Mechanized and motorized units are, however, restricted by terrain, and the Russians found out that Finnish terrain permits of movement in only two directions—straight forward or backward along the road. And while the Russians have been moving regiments, even divisions, along these narrow roads or through the narrow corridors between lakes, small quick-moving Finnish patrols have been operating from all directions against the front, rear, and flanks of these bottled-up forces. This, of course, reflects once again the intimate Finnish knowledge and the Russian ignorance—comparatively speaking—of the terrain.

Outstanding differences can be seen in both the mental and physical make-up of the Finnish and Russian soldier. The former, it must be admitted, has more to lose and is consequently more determined in his actions. He is enjoying that psychological stimulant which always inspires those who are defending their homeland. Furthermore, the Finn has had his difficulties with the Russian for the last 200 years, and during that period his love of independence and his hate of his eastern neighbor have been gradually increasing. The Finn's love for sports is reflected not only in his physical condition but also in his initiative and aggressiveness. If intelligence is added to these admirable qualities (there is less illiteracy in Finland than in any other country in the world), it is easy to see why the Finns make ideal soldiers, and why they have been so successful to date against the Russians.

The latter, according to reports, have occasionally been ignorant of where, why, or whom they were fighting. Their morale has not been increased any by the lack of clothing, food, and shelter which are essential in an arctic winter campaign. This lack applies equally to quantity and quality. Small wonder, then, that the Russians have not exhibited the enthusiasm and willingness of the Finns!

The material with which they are working may be plentiful, but observers report that it cannot compare in quality to that of other major powers. Tank armor is poor; break-downs are frequent. The percentage of "duds" in artillery ammunition is unusually high.

And what of the ability of the Russian officers? As a result of the purges* that have occurred in the Russian army in recent years, valuable experience and stability have been sacrificed. Replacements are required to learn, not from the experiences of their elders, but by their own efforts which, even in the present campaign, have led to natural mistakes and—another purge. General K. A. Meretskov conducted the campaign against Finland until 22 December 1939, when he is understood to have been called upon for an explanation of his failure to score more impressive successes in Finland. He was replaced by General G. M. Stern, one of the youngest of the military leaders of the Soviet Union. General Stern was a leading figure in the border wars against Japan. According to a report lacking confirmation, he was relieved 5 January 1940 by General S. M. Budenny, famous cavalry general. Such frequent changes in command may be satisfactory from a political, but never from a military, point of view.

According to foreign sources, the task of the Russian army officers has not been simplified by the "political commissars," agents assigned to units as low as the company and theoretically responsible for the morale of the men.

It would appear, at first glance, that the Russian board of strategy had erred in starting a campaign in Finland at the beginning of winter. The error, if any, seems to have been one of slight delay rather than of haste. The best season of the year for the movement of Russia's mechanized forces in Finland is that period of freezing weather preceding the heavy snows. The snows arrived a bit early this winter in Finland, and Russia's motorized units were reduced to inactivity. Arrival of spring will not improve the situation materially, for Finland's numerous lakes, swamps, and dense forests will keep all movements on the roads. Even the Leningrad-Murmansk railroad will have to be used with caution, for whole sections of track have been known to sink or tilt to a dangerous angle during the Spring and Summer months.

Hence it can hardly be claimed that Russia made a big mistake in deciding WHEN to attack. It was not a question of selecting the best time to move, it was a matter of choosing the least undesirable moment—subject, of course, to those political developments and policies which influence and determine military strategy.

It would also appear that Russia's main objective was to cut Finland in two at the waistline, and that her main attack was being made there. It must be admitted that such a step, if successful, would be a serious blow to Finland, for an important supply line would be severed. However, as pointed out several times previously, the supply problem precludes a main effort in that area even if the topography permitted it.

It is a more likely probability that the numerous attacks along Finland's northeastern frontier were secondary efforts, intended to draw the Finnish forces away from the southeast where the main attack was to be made. In modern warfare, geographical objectives have attained quite as much importance as troop objectives. The destruction of the hostile army, so essential to capitulation, has, in modern times, become dependent upon the speed with which those geographical centers, upon which the armys depends, can be destroyed,—or forced to capitulate.

The geographical objectives that Russia seeks lie in southern Finland. The only door to those objectives is in

*See Military News on Russia in March 1939 Review and current issue.

the southeast. Bombing them from the air will partially destroy them, but more than partial destruction is necessary to bring a determined nation to terms.

Finland's weakness lies in her lack of supplies and in her lack of manpower. Unless she is able to obtain supplies of all kinds, unless outside help is given her in the form of soldiers, it is difficult to see how her excellent little army can hold out for long.

Some of the weaknesses of the Soviet military establishment have been pointed out. Russian authorities were not aware of the determined opposition they would encounter from the Finns, and expected a "pushover" despite their weaknesses. The speed and ability shown in correcting these deficiencies may prove to be a big factor in the results of future operations.

As we go to press, there are changes in the Finnish lines established early in January because of terrific attacks launched by the Russians since the beginning of February. Soviet bombers have unloaded their bombs daily over Finnish coastal towns, railroad centers, and villages of any size. Troops and matériel have been hurled against the Finnish defenses in ever-increasing quantities in a desperate effort to break Finnish morale and resistance and bring the war to a close.

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An antiquated Army can serve only as a millstone upon the back of a tax-paying public.—Secretary of War Woodring, before a subcommittee of the House Appropriations Committee, 4 June 1939.

Foreign Military Digests

Digests of important articles from foreign military periodicals; the remaining articles for each magazine are listed in Catalog of Selected Periodical Articles.

Cooperation Between Infantry and Artillery

[Training Circular No. 10,200 issued by the Ministry of War General Staff, 3 June 1939. Condensed from *Nozioni per l'addestramento al Combattimento*, August 1939]*

By Lieutenant Colonel E. M Benitez, *Coast Artillery Corps*

The purpose of this Training Circular is to insure clearness, safety and promptness in the identification and designation of objectives and to secure active cooperation and coordination between the infantry and artillery officers in the combat zone.

Preliminary Arrangements Between Infantry and Artillery Commanders

Upon receipt of orders, preliminary arrangements will be made between the infantry commander (regiment or battalion) and the artillery commander assigned to the same sector. These arrangements are usually made at a point from where it is possible to obtain a good view of the terrain, the various reference points and the combat. This point should be, as a rule, the common observation post, where the two commanders will find themselves at the beginning of the battle.

The commander of the observation-communication (O.C.) platoon should also be present when the above mentioned arrangements are made, because his platoon will be required to establish communication between the infantry and artillery commanders and he must, therefore, be familiar with their plans of action.

The *infantry commander* acquaints the artillery commander with the following details:

(1) The situation, orders received, information of the enemy.

(2) His own plan of action, explaining his mission so that the artillery commander may be able to intervene effectively with his fire, even on his own initiative, both in the case of an objective previously designated, or in case that he can no longer receive requests for fire from the infantry commander due to a temporary lack of communications.

(3) Enemy elements—known or assumed—to be taken under fire by the artillery during the preparation or counter-preparation phases, as well as in the attack or defense.

(4) Effects to be attained against each objective (destruction or neutralization) and time limits within which they should be accomplished.

(5) Barrage zones in the defense.

(6) Successive command posts to be occupied.

(7) Means of communication with the artillery commander in case of temporary lack of direct communication between the two commanders.

The *artillery commander*, in turn, acquaints the infantry commander with the following details:

(1) The possibilities of intervention of his unit.

(2) Probable effects against each of the objectives indicated by the infantry commander.

(3) Safe distances to the front and flanks, with respect to each objective, considering the characteristics of the terrain.

(4) Probable duration of each fire action, including or excluding adjustment fire.

(5) Artillery patrols to be sent out.

The *two commanders* agree between themselves as to the following:

(1) Reference points.

(2) Methods of designation of unforeseen objectives.

(3) Methods for the transmission of requests for fires, and changes of fires.

(4) Methods to secure coordination between the advancing infantry and the supporting artillery (setting watches, flares and similar means).

When there is sufficient time, the two commanders prepare together or exchange the sketches and documents which they consider useful for a better and more complete cooperation between the two arms.

In the attack with large forces against an enemy organized on a defensive line, cooperation takes place on the basis of precise arrangements which are set forth in a plan of fires, more or less detailed, according to the information obtained of the enemy's defensive position.

Preliminary arrangements are often based upon a few known elements and, in most cases, upon assumptions which

*The Italian army is paying close attention to cooperation between infantry and artillery in battle. Although no details are available, it is understood that such cooperation was very effectively and efficiently carried out by the Italian troops in the war in Spain and it is probable that this Circular is the result of the experience gained in that war.

often do not conform to the actual situation. In such a case, it will be necessary to make new arrangements during the course of the action, which should be an easy matter if the two command posts are in the same locality or close together. Such location of command posts should invariably be the rule.

Preliminary arrangements and requests for fire are two of the greatest responsibilities of infantry commanders; but in battle the unforeseen case is usually the normal rule, hence, the artillery commander should be a man of initiative.

Identification, Indication, Determination and Designation of an Objective

Artillery objectives are those enemy elements upon which it is necessary to concentrate artillery fire. They may be:

(1) Known—those already identified and ascertained to be active.

(2) Supposed—particular localities or zones which are supposed to be occupied by the enemy—either due to their nature or on account of some enemy activities—terrain features, or again, on account of the general situation, particularly if they appear to be suitable for defensive use by the enemy.

(3) Unforeseen—those discovered during combat and against which no action could have been possibly planned in advance.

Known and supposed objectives are, as a rule, indicated by conventional numbers or names.

Reference points are easily identified and clearly visible points of the terrain, selected by common agreement by infantry and artillery commanders working in close cooperation, to which reference always must be made (at least one point) for the designation of unforeseen objectives. They are designated by a letter or by a conventional name.

When a detailed topographic map is available, in addition to reference points marked on the map and visible from a distance (a bell tower, an isolated building to be identified without mistake, a typical hill), it is advisable to select also other points which, even if not visible from a distance, are included within the area to be covered by infantry in its advance and which can easily and definitely be located on the map and on the terrain—such as road crossings, junction of rivers and water courses, and the like.

If a topographic map is not handy or if there are no characteristic points marked on the one available, well adapted details of the terrain must be selected—such as houses, trees, rocks, bushes of special shape or aspect which can be easily identified. Such points are noted by artillery observers and marked on the documents necessary for preparation of fires.

Whenever possible, reference points should also be indicated on a panoramic sketch (or panoramic and planimetric) to be issued to the commanders of the two arms concerned and to the artillery observation posts.

The indication of the objective to another observer may be more or less difficult depending upon the distance between the two observation points; two observers close to each other, for whom the panoramic vision of the terrain in the vicinity of the objective is almost the same, will be able to understand each other more easily than two observers far from each other for whom the panoramic vision may be entirely different. The following points should be borne in mind by observers when designating objectives:

(1) He who indicates an objective must try to imagine himself in the place and condition of the person who must identify the objective.

(2) In referring the objective to reference points, use preferably the indication: ". . . yards to the north (south, west, east) of point X." Do not use: to the right or to the left, as these indications refer to the observation point and therefore they are different from one observation point to another.

(3) It is always advisable to add a short description of the terrain close to the objective.

(4) The indication of an objective is made easier when every observer has on hand a panoramic sketch made from the position of the other observer.

Determination of an objective is the exact indication of the topographic position of an objective, with its coordinates and altitude, referred to a given map.

The determination of an objective (not considering the complex topographic methods which cannot be employed by advanced patrols) may be made with rapid methods by reference to an observation post the position of which is well defined. It is then only necessary to measure: the direction, the distance and the altitude.

Requests for Fire

The request for fire concerning an unforeseen objective must contain, if possible, the following information:

(1) Type and location of the objective.

(2) Time limits (beginning and duration, or beginning and ending) of the artillery action, and results to be secured (normally, neutralization; exceptionally, destruction).

(3) Position of the most advanced friendly troops with respect to the objective.

(4) Indication of the tactics to be adopted by infantry troops for conquering the objective.

Requests for fire must be made using the minimum number of words.

Practically, when arrangements have been made well in advance, a request for fire may be very brief.

It is not always easy for the infantry commander to foresee the duration of artillery fire that will be required to secure the desired result. As a rule, such information can be ascertained only when infantry resumes its advance, which causes the reaction of enemy fire.

It is, therefore, advisable to agree in the preliminary arrangements upon a normal duration of fire (some minutes) sufficient for the neutralization of the usual objectives which are generally encountered in war. When necessary, the request for fire may modify such normal duration of fire or the request for fire may be repeated.

When using concentration of fire, a duration of fire longer than from 3 to 4 minutes is not advisable, as a rule,

because, aside from the resulting number of rounds required, it can be assumed that after such length of time the men still uninjured will have moved outside of the radius of action of the shells.

During neutralization fire, infantry advances to the limit of safety and halts until the agreed number of minutes of artillery fire have elapsed, then suddenly jumps forward, supported by the fire of its own arms.

In some cases infantry will request artillery fire support in order to come closer to the objective and it will not always be possible to indicate the necessary number of minutes; therefore, neutralization fire will last until the infantry, having attained the safety limit, gives the signal for shifting fire (in this case neutralization will last longer, but it will be less intensive).

The end to be attained is a perfect synchronism between shifting artillery fire and resuming the advance on the part of infantry.

Request for fire is made by the infantry commander (generally battalion commander) directly to the commander of the supporting artillery unit (generally the commander of the specific supporting group) when they are close together; if this is not the case, requests will be made by means of the artillery O.C. patrol.

The artillery O.C. (observation-communication) patrol attached to the infantry commander is stationed at the headquarters of the latter and must invariably insure communication with the artillery headquarters from which it is detached. If necessary, it is also connected with any observation detail which the infantry commander may have stationed in some other locality.

The flare alone is not sufficient to indicate a request for fires as it cannot indicate the objective unless such signal was determined and agreed upon in advance. Therefore the flare is employed for requesting fire against a target previously agreed upon (beginning and ending), for requesting an increase in range or for end of fire.

Normally, the transmission of a request for fire is made by radio, telephone or other means of communication available, and must specify the following:

(1) The line reached by infantry.
(2) The objective against which fire is requested.
(3) Subsequent requests for increase in range or ending fire.

Any one means of communication may, by itself, be insufficient. It is therefore necessary that various means, best suited to the situation, be prepared, so that there will always be more than one available. Artillery is responsible for such communications with its own personnel and equipment. It is, however, advisable for infantry to cooperate with its own means, particularly in the advance phase when there is a great demand for communications and great urgency of artillery support.

Defense of Infantry Units Against Air Attack

["La defense contre avions dans les unites d'infanterie," by Captain X. Condensed from *Revue d'Infanterie*, September 1939. Translated from the French in the Historical Section, The Army War College, Washington, D.C.]

By Captain M. R. Kammerer, *Infantry*

The war in Spain has shown important changes in air tactics by reason of the technical progress of aviation and of the perfection of special antiaircraft armament. The latter has caused difficulties to airplanes above 4,500 to 6,000 feet. Airplanes have sought to avoid this danger by using lower altitudes and by "hedge-hopping"; at these lower altitudes antiaircraft artillery loses much of its effectiveness and cannot even operate without danger to its own ground troops.

Hence infantry should be highly concerned in assuring its own defense. Considerable effort has been made in recent years to acquire the necessary equipment, and this objective is about to be reached. But the employment of this matériel is not yet well understood for lack of a definite training policy. And for lack of a broad view of this problem, commanders show, at times, a certain indecision in the instructional process to be followed.

A study of the following subjects should furnish a knowledge of the principles underlying infantry antiaircraft tactics and instruction:

(1) Aviation missions.
(2) What should infantry fear from these various missions?
(3) What characteristics should antiaircraft weapons possess?
(4) How should infantry employ these weapons?
(5) The best system of instruction in antiaircraft defense?

I—Aviation Missions and Tactics

Air missions can be grouped under missions of destruction and missions of reconnaissance. The former include, for our discussion, bombardment and hedge-hopping missions.

Bombardment missions have for their objectives the destruction of ground targets, by bomb, torpedo, machine gun or cannon. One can consider that infantry is concerned only with air attacks under 4,500 feet; above that altitude antiaircraft artillery becomes really efficient. Suitable targets for bombardment attacks at low altitudes are assembled troops, troops in column, convoys, mechanized troops, general headquarters, railroad stations, warehouses, etc. On account of the concussion from the explosion, these attacks are seldom made below 3,000 feet.

Attacks at very low altitudes (under 1,500 feet) and hedge-hopping (under 150 feet) seek the same objectives. Their efficiency is increased by the great moral effect and

by the surprise element. They can be used against anti-aircraft artillery to protect formations passing at high altitudes. They frequently attack with machine guns or cannon which seem to have an especially great moral effect.

Reconnaissance missions, by sight or photography, are not effective at altitudes below 3,000 feet. To locate foot elements in column, they are not effective at altitudes above 9,000 feet.

In order to identify elements and detachments of troops, in order to locate the presence of hidden installations and pieces of artillery, ships must fly at altitudes of less than 3,000 feet. *Location of elements dispersed in combat, the* normal liaison mission, requires ships to fly below 2,400 feet To observe enemy troops trying to conceal themselves, ships will have to descend to a very low altitude (1,500 to 150 feet).

It is quite reasonable, then, to expect that aviation, whether attacking or observing infantry troops, will be concerned especially with assemblies of troops on the march or at a halt, with convoys and columns, and with bivouacs. It will have the greatest difficulty in attacking or observing troops, at a halt or moving about, in a dispersed formation, even by hedge-hopping methods.

II—What Should Infantry Fear?

Infantry will be brought near to the field of battle by rail, by truck or on foot. Columns on foot and motor convoys can nearly always move by night. But as far as movement by rail is concerned, this involves a general circulation plan which cannot be interrupted by halting during the day The defense of *railroad trains against air attack must* be provided. As has been previously stated, heavy antiaircraft matériel is not satisfactory against low-flying attack ships, and the use of such matériel to reinforce the defense of entraining and detraining zones is a matter of opinion In other words, during the movement by rail from entraining to detraining, it is against the low-flying attack ships that infantry must provide its own defense.

There will be occasions when motor columns, especially vulnerable to air attacks, will have to move by day. Echeloned even at a number of miles, they are readily observed by ships flying as high as 15,000 feet. It is necessary to assure their protection without delaying their movement. The problem is even more involved, inasmuch as the assailant, having selected his objective, can choose the most favorable point to make his low-flying atack. Especially critical moments are those at points of *entraining and detraining.* The problem is not quite as serious as that of a movement by rail, however, for it is possible to decentralize motor *loadings or unloadings over a large area.* Where circumstances permit such decentralization, the only protection necessary is against low-flying ships.

Columns on foot are much less exposed. Ships cannot observe short columns at altitudes above 9,000 feet. Troops making good use of cover (roads bordered by trees, for example) can pass along very well concealed. Horse-drawn transportation is especially vulnerable, but horses, for the most part, will be in convoys, defense of which should be organized in the same manner as that of motor columns.

Attacks on foot columns would be of little value. To be effective, they should be made by low-flying planes; at this altitude ships have much more difficulty in locating the small elements that make up these columns. If warning can be given in time to permit the troops to disperse there will be few casualties. The noise of the motor can be heard twenty to twenty-five seconds before the arrival of the attack. In ten seconds the dispersed formation can be taken, provided the warning system is properly organized. Columns on foot, therefore, take little risk of observation or attack from the air.

Nevertheless, frequent attacks on a column have the effect of slowing down the march considerably, and ships *flying* slowly at low altitudes have little trouble in locating the column. Therefore, it is necessary to organize a defense against these two contingencies.

Troops at a halt need worry little about observation or attack from the air provided measures for passive defense have been taken to screen the troops from the air, to disperse them to a maximum, to protect them in houses or in deep trenches in case of an alert. If troops are bivouacked they should be well spread out over the area and put under cover.

When troops are in the combat zone, they pass progressively from column to a dispersed formation. Danger from the air becomes then of secondary consideration and they devote to air defense only such weapons as are not needed *for ground combat. During the approach march,* while gaining contact with the enemy, and during the attack, infantry will have little to fear of hostile observation or *air attack.* The deployed formation of infantry troops makes the former almost impossible and the latter impracticable. It is well known how hard it is for a ship on liaison mission to locate its own front line. Obviously, it is much more difficult for an observer to locate an enemy of whom little or nothing is visible. Preferably, an observer, and the attack pilot too, will turn all efforts to locating the movements of reserves and supply columns.

Troops in an organized defensive position have little to fear from air attacks, although observation aviation can be troublesome. Disciplinary steps must be taken around command posts to avoid signs of activity. But in general during defensive combat, danger from the air is only secondary.

III—Infantry Defense Against Aviation

Against Observation

The greatest protection is afforded by the use of passive defense: movements by night, use of cover, dispersion of *units,* camouflage. These devices should be employed under all circumstances.

Against observation at high altitudes, infantry has no means for active defense. It is a matter of resorting entirely to our passive measures.

Against observation at medium and low altitudes, passive measures are still the most effective, for active measures would disclose by their fire the presence of units that would otherwise remain invisible. Active measures would be taken only to oblige observation to take altitude and so prevent detailed observation.

Against observation at very low altitudes, active measures should be taken in every case since in such cases it is often impossible to know whether a ship *wishes only to observe* or to attack.

Against Attacks

Here again passive measures render great service and should be used to best advantage Active defense must, however, be provided for all elements not only against hedge-hopping attacks but also against those at very low altitudes. Organic weapons of elements engaged in their normal mission should always be given an antiaircraft mission. In particular, automatic weapons should be out in front at specially chosen points.

The first defense, however, must be the organization of a highly alert warning service Active or passive measures against attack aviation are ineffective unless dispositions are made swiftly and only when the situation requires it to avoid loss of time.

Let us see, now, what sort of characteristics weapons should have in order to provide a secure active defense. These characteristics will be examined in their relation to the altitude of attack.

(1) Attacks up to 1,500 feet In such situations infantry must defend itself in every case Infantry antiaircraft weapons, in order to be effective against these low attacks, should: be able to be placed in position instantly; be able to follow or even anticipate the movements of the hostile ship; be provided with a simple and flexible aiming system; employ no so-called measurements, or calculation of data, but be content with approximations; be able to place the maximum number of projectiles in the vicinity of the target in the time available; be able to place the hostile ships under fire at a maximum range of 600 yards

(2) Attacks between 1,500 and 4,500 feet Infantry has nothing to fear from this sort of danger from the air, unless it is in column, convoy, or halted closed up Defensive weapons against such attacks require increased flexibility and precision. Firing data should be calculated with care The increased range requires smaller dispersion in order to keep the density of the projectiles within effective limits Rate of fire should be very rapid On account of the danger of falling projectiles, it is necessary for them to explode in the air automatically.

Such weapons are specialized and constitute a part of the organic weapons of antiaircraft artillery. It being impractical to assign such weapons to infantry units, the question arises as to whether or not the power of the infantry machine gun could be increased and substituted for such heavy weapons. If not, infantry must resort to a passive defense against air attacks from above 1,500 feet

IV—Employment of Organic Weapons

The rifle fires only a single bullet. But the simultaneous fire of a large number of these weapons builds up a dense zone of projectiles about the airplane. Use of the rifle is almost instantaneous The lack of a suitable sight makes the rifle difficult to use at the present time. The method of correction, aiming a certain number of fuselage lengths ahead of the ship, is scarcely practicable against hedge-hopping attacks and can only be effective under very favorable conditions against very low flying planes.

The automatic rifle is, without a doubt, better suited to the conditions of the problem than the rifle It can go into action very rapidly Its slow rate of fire, its dispersion, its inaccurate sight require the use of a large number of these weapons. The automatic rifle lacks stability. It would be advantageous to equip it with a stable support (a post) each time it goes into position. "Off-hand fire from the shoulder" is not very effective as it gives too much dispersion.

The machine gun, equipped with a stable mount and having much greater accuracy, is a much more effective weapon than the automatic rifle. Its sight has been improved by recent modifications. Its weakness is the longer time required for going into action.

In the case of these three weapons, it would be an interesting experiment to verify and correct their fire by the use of tracer ammunition. And it would demonstrate the danger to ground troops from bullets falling back to the ground. One might be able to derive a safety formula for limiting fire in occupied areas. But could such rules be applied without rendering this fire ineffective? Would it be possible to comply with the spirit of such regulations in the crisis which is always present on the appearance of an attack ship at a very low altitude?

The employment of the three infantry weapons should be governed by the following rules:

(1) In all cases open fire with the maximum number of weapons.

(2) During movement, security is possible through rifle and automatic fire. Thanks to their availability, these weapons can prevent surprise which always threatens troops on the march. Automatic rifles should be out of their cases with sights set The soldier carrying the mount should march beside the man carrying the gun. Machine guns can be employed the same as at a halt, sent out ahead, scattered along the line of march especially at critical points in the column.

(3) At halts machine guns will be the basis of the defense and they will cover the most dangerous avenues of approach. Their fire should be supplemented by the use of automatic rifles to augment the fire of the machine guns, to improve the interior defense of the area, or to cover avenues of approach not protected by the machine guns.

(4) In combat, advance elements, as we have seen, need worry little about attacks from the air. Rear elements, reserve elements, should employ their rifles and automatic rifles and consider such use the normal mission of these guns; machine guns should be used if there is time to mount them Bullets falling back to the ground are a danger not to be neglected, but it is difficult to see how effective measures can be taken to avoid this danger.

As we have seen, the active defense against planes attacking at altitudes above 1,500 feet devolves upon weapons not assigned to infantry units. Employed in relatively few numbers, their fire must be accurate, they must have sights permitting precise adjustments, their projectiles should explode in the air. Their normal mission will be protection of troop concentrations, whether infantry, artillery, or other branches. This mission includes units on the march or at a halt. If protecting troops on the march they should be located at sensitive points where an air attack would be particularly remunerative. When protecting a bivouac area, the gun positions should be on the most likely avenues of approach of the attacking planes. They should be at a suffi-

cient distance from the area and should be occupied sufficiently in advance to be able to fire on hostile ships before they reach effective range (4,500 feet) from the troops to be defended. Good visibility in all directions is necessary, and a hostile ship should be covered by two sections of defense guns at any time.

V—INFANTRY INSTRUCTION IN ANTIAIRCRAFT FIRING

As far as the defense against very low flying attack ships was concerned, the war in Spain showed that antiaircraft measures were not effective. The following explanations of this weakness are advanced:

(1) No adequate warning system was organized, with the resulting surprise and terror among those unaccustomed to such attacks.

(2) A lack of instruction, shown by the failure to use organic weapons and the slowness in using special weapons.

These two weaknesses emphasize the necessity for instruction in time of peace along certain lines.

Whatever the imaginary situation may be, and wherever possible using friendly ships to represent the enemy, the organization of a warning system should be so perfected that all are familiar with it and its operation becomes a true reflex action.

All units should become accustomed to having ships fly over them in simulated hedge-hopping attack so that they will restrain their normal reflex of dropping to the ground as quickly as possible and thus ruin their chances for defense. By frequent exercises with the aviation they should accomplish this.

During such exercises every individual should be made to realize the importance of the use of the maximum number of weapons to assure this defense without letting it degenerate into a useless "free-for-all."

Every effort should be made to score a large number of hits on sleeve targets towed by low-flying ships so that the men become accustomed to this kind of fire, and, by the results obtained, gain confidence in their weapons.

It would be well to note in this connection that if unsatisfactory results are obtained in this firing at towed targets, it is probably because, for safety reasons, the firing was done under difficult circumstances, the ship passing at right angles, thus requiring a large sight correction. It seems certain that it is possible to get plenty of hits under favorable conditions, by making the ship follow a course reasonably parallel to the axis of fire and not too perpendicular. It is well to remind soldiers that usually the aviator is interested in the target only when he is flying directly towards it and not when he is detouring to one side. It should be shown that it is much more profitable to shoot at greater ranges at ships coming directly toward the firer than at closer ships passing to one side.

Infantry is far from being helpless against air attack, provided it fortifies itself in its own domain. It will never be assured of an adequate defense until it organizes its antiaircraft defense in the most minute details, translates this schooling into reflex action of all concerned and puts this instruction on the same footing as other kinds of combat firing.

If, in the face of an air attack, each man is imbued with the will to defend himself, to fire especially when directly attacked; if the maximum number of weapons are employed; if immediate air security and the use of overhead cover are carefully coordinated; if an adequate warning service has been devised; if commanders keep in mind the best passive defense measures, one can be assured that enemy ships will adopt a much more prudent altitude. Again they will believe as they did at the end of the war of 1914-1918 that missions at low altitudes are the most difficult and the most dangerous, and their inclination will be to pass by rapidly.

War in its Reality and the General of the Future*

["Kriegswirklichkeit und Zukunftsfeldherr," by General Wetzell. Condensed from *Militar-Wochenblatt*, 3 March 1939.]

BY MAJOR WILLIAM H. SPEIDEL, *Infantry*

The "Portrait of the Modern General" sketched by me is taken from actual conditions which existed during the World War, the actual disposition of the armies in 1914 and the enemy situation as known on 15 August. It is not based on the Schlieffen Plan of 1905, which was never carried out, and which, as Ludendorff says, "did not even fit the situation which existed in 1914." Now it is quite possible that my proposed dispositions might have been misinterpreted and misapplied by individual subordinate commanders. These faulty conceptions are obstacles which cannot be overcome by the commander in chief, if he remains at his desk and relies solely on the telephone. Not only Moltke, but Goltz, Schlieffen, Freytag-Loringhoven and others continually warn against such a situation, cautioning that each army commander in war as well as in peacetime exercises and general staff rides will have his own personal operations plan. To overcome these obstacles requires personal intervention and oral discussions, the example as set by the great Moltke.

This is my conception of the modern general, for this is the way in which Ludendorff generally exercised his command. In spite of the excessive responsibility forced upon him and that which he assumed voluntarily, he was never bound to his desk. Whenever the situation permitted he hastened to his armies in order to discuss personally his objectives and intentions and to learn the opinions of the

*This is the third and concluding article written by General Wetzell under the main title *Das Bild des modernen Feldherrn* [Portrait of the modern general]. The first two installments appeared in previous numbers of *Militär-Wochenblatt*, published 17 February and 24 February 1939, respectively. The "Catalog of Selected Periodical Articles" in the *Command and General Staff School Military Review* contains abstracts of these two installments in the December 1939 and current issues.

commanders at the front, their chiefs of staff, etc., as well as the views and wishes of the troops. Now, it is unfortunate that General von Falkenhayn, in assuming his most difficult role, acted otherwise. His strategic conception was thoroughly sound and promised great success. Had he visited the decisive right flank immediately, preferably the Second Army and the much maligned Field Marshal von Bulow, he would have found the best foundation and support for his new, highly prospective strategic idea. Instead he remained at his desk at G.H.Q., and, as his predecessor had done four weeks previously, permitted his Chief of Operations to influence him in changing his mind. He allowed himself to be persuaded to commit the fatigued troops of the First and Fifth Armies to a frontal attack and to issue ominous orders "to pass through the hostile artillery fire." This was the beginning of the confidence crisis, which was aggravated still more by the unsuccessful "race to the sea" and the effects of Verdun in 1916. It finally came to an end with the entry of Rumania into the war. Such were the consequences of a command exercised from the desk. Indispensable contact with the front was often lacking. In this respect our history of the World War makes use of the term "stranger at the front."

The commander in chief will never become a stranger at the front if he maintains the necessary close contact with his instrument of war. If he shuns the role of the solitary, learned thinker at the desk and visits the various army headquarters as often as possible, his sound conception of war will forever spare us the recurrence of such a situation. The attitude assumed by the commanding generals in remaining as much as twenty miles behind the front on the important days of a battle, conducting their operations without maintaining close contact with the corps commanders at the front, had at the beginning of the World War the worst possible effect not only on G.H.Q., but on the individual armies as well. During the winter of 1917-1918, pertinent to the conduct of the spring offensive, the Third High Command ordered: "The location of the command post is of vital importance. All staffs, including those of corps and army, belong on the battlefield. The division command posts must be well forward." Even after four years of war these orders were partially disregarded with detrimental effect. For example, the gap at Amiens and the one at Montdidier were neither recognized nor exploited opportunely, nor were they reported to the High Command at nearby Avesnes, a situation which created an obstacle to ultimate success. The conduct of the Eighth Army by the Hindenburg-Ludendorff combination during the Battle of Tannenberg serves as an outstanding and everlasting example for the exercise of a high command.

Contrary to the opinion of Foerster, I believe that the modern general, like the older Moltke, should play an occasional game of whist or, as was the habit of one of our most prominent army commanders, a game of bridge, if he considers it beneficial to his mental relaxation. With apparent effect it was the custom of the French Generalissimo Joffre, a man with nerves of steel—Liddell Hart refers to him as the "nerve tonic of the Entente"—to retire at 10:00 PM to the exclusion of all subsequent callers. Perhaps that may be somewhat extreme, still the more sparing the responsible commander in chief is of his physical condition, the more will his mental condition be improved. He will profit by following the words of the ancient Roman: "*Minima non curat praetor.*" Whenever possible Foch unburdened himself upon his chief of staff and confidant—Weygand. Speaking from my personal war experiences, if I may venture to say, it would often have served us profitably had we acted likewise from the beginning of the war.

Upon the outbreak of hostilities the military commander of the future will be confronted with the most difficult problem produced by the World War—the breakthrough, which today must consist of penetrating permanently fortified frontier zones. I again disagree with Foerster that, "during the preparation of this highly complicated method of attack, the commander in chief must remain far behind the front and that personal reconnaissance of the terrain or even the hostile situation is superfluous and useless." It is my belief that the opposite is true. I refer to the activities of the Third High Command during the winter of 1917-1918, when it was preparing for the great spring offensive of 1918. Without a personal general knowledge of the probable battle zone, without an intimate personal collaboration with the subordinate commanders concerned and without regard for their requests and opinions, insofar as time permits, such a tremendously difficult task as the attack against a modern fortified zone can never be successful. It will not be the "commander at the desk," but the one with the carefully selected and trained staff covering all parts of the front, who will bring victory to his colors. Today, even before the outbreak of hostilities, extensive use should be made of the automobile and especially the airplane (particularly during the period of concentration). It is the personal leadership emanating from the commander during intimate cooperation which is the source of that subliminal confidence between him and his instrument, even down to the youngest soldier, a confidence that is so essential to success in war, and one that prevailed in 1918. But the task went beyond our strength; now we were fighting against practically the entire world, at last even the Americans.

To quote Moltke, "the military commander is the fate of the nation." Regardless of the magnitude of the head of the state, success or failure in war depends solely upon the capacities of the military commander. Only the seasoned soldier, the general staff officer who has received a thorough training in war or devoted himself to serious study, and who has been tested in a great variety of peacetime assignments, will qualify in such a capacity. He will have to safeguard against those political demands which are opposed to the nature of war. Even the great German military statesman in 1866 made a serious military error in causing Vogel von Falkenstein to march on Frankfort on the Main, instead of establishing contact with the hostile forces in South Germany and defeating them. This mistake was averted only by a change in the High Command. Again in 1870 Bismarck, despite his eminent military qualifications, was responsible for the faulty conceptions which arose after Sedan relative to the continuation of the war. It was only due to the keen military perception of the king that these conceptions were finally corrected and the war was continued as proposed by Moltke.

In accordance with all our experiences a selection of the commander of the armed forces from the very best material

available should be made during time of peace. The statesman should make a definite declaration of his political aims at an early time in order that the military commander may have a definite basis on which to construct his peacetime preparations, the plan which will determine the military-political objective to be gained in the event of war. In time of war the military commander alone fulfills the will of the statesman. Therefore, since the military commander must subordinate himself to the head of the state (statesman) with regard to the dynamic and decisive policy in peace and its objectives in war, the head of the state accordingly must subordinate himself to the military commander insofar as the accomplishment of the military victory is concerned. Without this condition the policy cannot achieve its crowning success in war. In order to attain this coordination of the political and military aims and actions in war, it is necessary that in time of peace the head of the state approve the operations draft in principle. Such a condition existed at the time of Bismarck and Moltke. It is vital to the welfare of the nation, therefore, that the head of the state be competent to appreciate the military situation and that the military commander be able to comprehend the affairs of politics, one equally as well as the other. While this condition existed during the period of Bismarck and Moltke, it unfortunately was lacking in the years preceding and during the World War. We shall need it again, if ever we are confronted by a similar situation.

During his peacetime preparation for war the military commander, in educating and training his subordinate commanders and their staffs, must strive to harmonize their views with his own. In theory this may be accomplished by evaluating the experience gained in war up to the most recent times, by fostering the study of military science and by participating actively with his chiefs of section in staff rides, war games and tactical exercises. All types of field exercises, including joint maneuvers on a large scale conducted realistically, are of equal importance. In this connection I wish to stress the value of skeleton exercises involving all branches of national defense, for they constitute a conversion of the great staff rides into the "practical conduct of high command," accompanied by all the friction present in actual war.

Such a thorough method of training will develop an instrument of war with commanders and troops prepared for an emergency. Still in order to employ this war machine expertly under actual conditions, one must have a commander in chief who is familiar with the use of the various technical aids of a high command. He must not be a general who "makes his plans at a desk in some distant warm office," but a leader mentally alert, keeping himself and his staff constantly on the move, possessing the confidence of his subordinate commanders and troops, remaining near the front and instilling morale in his armies—a man of action. His appearance at the spot where the main blow is to be delivered must be opportune; wherever necessary, he must be prepared to assume command personally, imposing his will upon the conduct of operations and the war in general, for it is he who solely is responsible to the state and its citizens. Our great German military history, in this respect, offers us the best examples in such characters as Frederick the Great, Blucher, Gneisenau and the greatest of all, Field Marshal Count Moltke. Following the instructions of the latter and the training which he received from Schlieffen, Ludendorff, the greatest German general of the World War, conducted his operations during the greatest struggle in the history of the world. Judging from my own experiences in war, it appears to me that the latter presents the most worth-while example and a realistic war-time portrait of the modern general.

COLONEL WOLFGANG FOERSTER'S REPLY

In the April 1939 issue of *Wissen und Wehr* Colonel Foerster presents a reply to the series of articles written by General Wetzell under the main title *Das Bild des Modernen Feldherrn*. This reply employs the same title, but adds the subtitle, *A Word of Defense and Explanation* [Ein Wort der Abwehr und Verstandigung]. Colonel Foerster's article in condensed form is presented as follows.

The twenties and thirties of the nineteenth century introduced an era of inventions. Even though the roots of that era reach well into the past, the fact still remains that a mass of innovations appeared suddenly, affecting fundamentally the conditions of life in peace and in war. The conditions and possibilities of military command were influenced to such an extent that we may be justified in speaking of a "new period." In his *Instructions to Commanders of Large Units*, Moltke, in 1869, states: "The progress made in the field of technique, improvements in communications, the introduction of new arms, briefly, the complete change in conditions appear to prohibit the employment of means formerly used to secure victory and even to upset the rules as laid down by the greatest military leaders." A repetition of this statement in his revision of 1885 indicates that he attached a lasting meaning to it.

Although Moltke was not the first military leader to make use of the railroads to shift troops quickly from one position to another, he was the first general to execute a systematically planned concentration by rail. It was through his efforts and that of his closest collaborators that the railroads were developed into an instrument of warfare. A quotation from Moltke, "as the railroads serve transportation and movement, so the telegraph serves the transmission of information," indicates that he attached equal importance to the telegraph as a strategical aid.

I cannot admit that Napoleon or any of his opponents made any definite effort to effect an ideal battle strategically planned. At that time operations conducted with separate armies were regarded as a necessary evil. When joint action was effected it was not the result of a strategic plan, but from changes in the original plan injected by the inspired intervention of the commander of one of the separate armies.

To prove the influence of technical improvements upon the actions of the modern military commander, I mentioned that the military commander must make far-reaching preparations in time of peace in order that at the outbreak of war, when confronted by the initiative of the enemy, he may expand or alter his plans in order to create by strategic means those tactical requirements favorable to battle. Errors in the concentration are an entirely different matter than concentration measures which, due to some change in the situ-

ation, require the aid of rail transports. In the case of the concentration of nearly one-half of the Austro-Hungarian armies on the Balkan Front at the outset of the World War, we have an example of an error in the original concentration which was impossible to correct by subsequent rail transport.

I maintain that the principal work of the commander in chief is finished as soon as the forces are engaged in battle, in the sense which Moltke considers ideal. Although the commander does not retire completely from directing the operation itself, his subsequent efforts will be small in comparison with his previous function as the director of the central will. The battle remains the essence of his will, but the main part of his activities precedes the battle.

With reference to the Battle of Colombey, Moltke did not issue his directive after he had clarified the situation of the Second Army. On the contrary he was completely in the dark concerning the hostile situation and was unable to clarify the situation despite his presence on the battlefield during the foregoing day. It was only his efforts prior to the decisive battle which made victory possible. On the following day, according to the careful research and estimate of the General Staff, the High Command played the role of the observer whose influence was withdrawn from the course of action despite numerous attempts to intervene. The General Staff in its study of Sedan states that "the execution of this battle resulted so completely from the preceding operations that not a single order from the Army Commander was necessary during the battle to assure uniformity of the action."

In the 1885 revision of the *Instructions for Commanders of Large Units*, Moltke states: "As a rule the supervision of a part of the front is of little advantage to the commander in large-scale operations. He still must depend on messages and, if he receives his information equally from all parts, his conception of the situation often will be clearer. At a distance from the confusing impression of the fighting he may make his decisions with greater calm. Even after the final decision has been reached all commanders must be completely at ease mentally as well as physically."

When I speak of Ludendorff I realize what it means to Wetzell, who for two years served this great general as his first assistant in the operations section. I believe that his protests are due entirely to misunderstanding and erroneous interpretation. At no time did I speak of a "stranger at the front" or of a "learned thinker who relies solely on technical means of communication, and dispensing with personal discussions with his subordinate commanders, remains bound to his desk." I did say that, for many years to come, the strategist who plans carefully and directs the maneuvers from a central location will remain the typical figure of the modern general as presented to us in the World War. Near the close of the World War practically every wish of the commander in chief with regard to direct communication over long distances could be met. He was not subjected to excessive physical strain. His decisions were made in a warm, well-lighted room at his map table. On the other hand, the ease of transmitting orders and messages increased greatly the flow of incoming and outgoing communications. The effect of this was a corresponding increase in his mental tasks. The military commander of the World War period was confined to his office almost constantly. He had to depend to a large extent on his staff, which meanwhile had grown considerably. His activities were not limited to the conduct of operations. He was required to make decisions in technical, economic, political and educational matters.

This type of military commander is represented by Ludendorff, who in his *Totalitarian Warfare* writes: "The military commander is a solitary figure. No matter how clever and intelligent his staff may be, his thoughts remain impenetrable." That is precisely what I inferred when I wrote that "the military commander may well utilize the advice of others. There are sufficient intelligent minds capable of assisting him in surveying the entire extent of the field of vision. To maintain his self-respect the military commander cannot tolerate any foreign element within his personality."

With reference to the "military commander who is a stranger at the front," my statement implied a "separation if not an estrangement of the troops from the commander in chief." I have in mind only the commander in chief of the combined armies and not the higher or lower commanders subordinated to him. Even though the military commander has become invisible to the troops and assumed the personality of a solitary figure, "at heart he remains close to his troops." To quote Ludendorff, "the will of victory still must radiate from him and inspire the army and the nation to heroic deeds."

Of "the learned military commander," our knowledge of Frederick the Great, Napoleon and Moltke indicates clearly how eager they were in acquiring knowledge, yet how even more keenly they considered the need of employing knowledge as a means of mental training and passing judgment. As Ludendorff explains, "the military commander must not permit technical details to obstruct the wide scope of his thoughts. The particular results, however, gained from the advice of highly trained specialists, must be crystallized harmoniously in a single mind."

Of "the thinker at the desk," it cannot be denied that most of the mental activities of the modern military commander center at his desk. This does not imply, however, that his time must be spent entirely at his headquarters. During the World War he often had to resort to personal discussions with the representatives of the Allied high commands and his subordinate commanders, necessitating frequent absences from his headquarters. Unfortunately this was not the case with the younger Moltke. Still this essential mobility of the military commander does not alter the fact that his decisions were made "in a warm and well-lighted room at the map table." Tannenberg was the only battle which Hindenburg and Ludendorff did not direct solely from their headquarters, and even then it was the map rather than observation on the ground which determined the few decisions other than those issued from headquarters. Even on his well-known tour of the front prior to the great drive on the Western Front, Ludendorff did not visit the troops in the field, but the offices of the various staffs.

In concluding my article I indicated that the military commander of the future will occupy a position within the framework of the government different from that which he occupied during the World War. Today he may be required to carry out orders to which he objects for strictly military reasons, and thus becomes more or less dependent upon a

superior will. In his interpretation Wetzell has missed completely the sense of my statement. Interference by the head of the state in the command of military operations is not to be inferred, but rather in the decision where certain operations should be conducted. In this respect I adhere merely to the principle as stablished by Clausewitz: "War is not an independent matter but a continuation of the policy with altered means." On the whole I am convinced that my conception of the modern general closely resembles that of General Wetzell. Our differences of opinion are concerned more with historical details rather than with the nucleus of the problem.

Military Land Warfare

["La lutte militaire terrestre," by General Dame. Condensed from *Revue des Questions de Défense Nationale*, August 1939. Translated from the French in the Historical Section, The Army War College, Washington, D C.]

By Captain M. R. Kammerer, *Infantry*

The objectives sought by land warfare can, in general, be attained only by occupation of territory; something for which neither naval forces nor—for the time being at least—aerial forces are adaptable. Admiral Nelson, in 1796, admitted that: "It is unfortunate that the fate of nations is not decided upon the sea." Whenever a naval power comes into conflict with a land adversary, the former must send large armies to the continent; witness England, during the wars of the Revolution, of the Empire, of 1914-1918.

Unless aviation obtains decisive results through surprise at the beginning of hostilities against an adversary who is neither prepared for nor armed against aerial danger, it can not obtain the capitulation of a nation determined to fight.

France is, of course, a maritime power as well as a continental power. She has, however, been able to carry on naval conflict and realize colonial expansion, only when she has neutralized possible enemies on the continent or when she has been encouraged in these colonial aims by such enemies.

It is on her land frontiers that France has defended her existence and, more especially, on her northern and northeastern frontiers, where she has been unable to attain her natural boundaries. That is where she clashes against her most powerful enemy, where France's destiny is at stake.

It is certainly not our intention to minimize the importance of naval or aerial conflict, both of which are indispensable for the sustenance of land warfare and for maintaining the life of a nation at war. However, in France, land warfare appeals to a characteristic national conservatism. Hence its special importance.

One of the consequences of this special importance is that land warfare is the prime focus of French war plans. But land warfare is only one of the factors of total warfare. Land warfare must adjust itself to the other factors. A general policy must be determined by the government. It is the government which must determine the goals to be attained by military action on the ground.

A study of the German war plan in 1914, or of the interallied war plan for 1918 would reveal the aspect of land warfare as it appeared to the higher echelons which were responsible for the military conduct of the war. They answer a question which must be solved at the outset Given the political situation and the probable or possible adversaries, given the general policy which has been decided upon, the question is: what general distribution of efforts must be decreed?

In answering this question, two points deserve particular attention. These are: the number of theaters of operation and the attitude which should be maintained on each of these.

Action on Several Fronts

The mere act of multiplying the number of theaters of operation—provided sufficient forces are available to man them—is desirable, since it makes it possible to attack the enemy on several fronts and obliges him to divide his forces.

There is no doubt that with no cause for uneasiness concerning the frontier of the Pyrenees nor that of the Alps, the situation of France in 1914 was very secure. Germany, on the contrary, was obliged to fight on two fronts. As a consequence, the serious threat of the Russian armies against East Prussia induced von Moltke, on 26 August 1914 to draw two army corps from the right wing of the German armies in the west. These two corps were sorely missed at the Battle of the Marne, and they might well have changed the outcome of that battle.

France has frequently been obliged, during the course of her history, to fight on several frontiers. France has always sought in the East some counterbalance to the power dominating Central Europe, either to ward off danger from her own eastern frontier or to diminish the importance of such danger. This is a bondage which strategy imposes upon political policy.

Defensive and Offensive

To this idea of multiple theaters of operation, of fighting on several fronts, must be added a conception as to what attitude should be maintained on those fronts: offensive or defensive.

If we assume the conservative point of view examination of this question will prove interesting. In the first place, the integrity of the national territory must be maintained. During the course of operations, it is necessary to assure the solidity of one's own front before undertaking the offensive. We may therefore conceive of successive series of applications of the offensive and the defensive.

However, this is not a new idea. It may be found expressed in a very striking manner, by Clausewitz, as early as 1827:

"If the defensive is the stronger form of conducting war, but has a negative object, it follows of itself that we must make use of it only so long as our weakness compels us to do so, and that we must give up that form as soon as we feel strong enough to aim at the positive object. Now as the state of our circumstances is usually improved in the event of our gaining a victory through the assistance of the defensive, it is therefore the natural course in war to begin with the defensive, and to end with the offensive. . . ."

Command in Various Theaters of Operation

When the aims and general methods of land warfare have been determined by the Government, the next step is the preparation of practical plans for attaining those aims.

The commander in chief of the land forces is responsible for the conduct of operations in all of the various land theaters. He transposes the aims which have been fixed by the government into a specifically military realm. It is here that contact between policy and strategy occurs.

He establishes the theaters of operation, designates their chiefs and assigns missions to them. He also furnishes the means. Thereafter the commander of each theater is responsible for the actual conduct of operations in his own theater and must there have freedom of action. The actions of the commander in chief are in the sphere of strategy whereas those of the theater commanders are in the field of tactics. Strategy and tactics constitute military art and science and are inseparable.

The Conduct of Operations—Strategy

A study of documents left by the great leaders of the World War brings out two words which are repeated constantly: "objective" and "direction." It shows displacements of forces from one point to another to emphasize the efforts which are to be taken. These are the essential bases of any strategic maneuver.

The Objectives

The objective is the materialization of the goal to be attained. Insofar as land warfare is concerned, the destruction of the adversary's armies delivers him to the mercy of the victor. This is why Napoleonic doctrine designates the principal mass of enemy troops as the strategic objective.

However, geographical objectives are just as important as troop objectives in the land warfare of today. In order to be able to live and to fight, modern armies require impressive tonnages of materials, which can be supplied only by rail and road lines of communication. These lines of communication are equally indispensable for maneuvering. Consequently, they constitute choice objectives in land warfare.

Direction

Any question of an objective also involves a choice of the direction to be followed in order to secure it. The problem is not a simple one. As a matter of fact, "when the objective is geographical, a straight line will not always be the quickest nor the surest way to reach it. Use of this line may be denied either by the situation or by the defenses of the enemy, or the terrain may render it impracticable. When enemy armies constitute the objective, hostile reactions or maneuvers make it even more difficult to fix direction. We may say that we here find ourselves in the presence of one of the most delicate problems in strategy, one of those which put the powers of perspicacity, of judgment and of decision of the leader to the most severe test."*

It becomes all the more important not to err in the determination of directions because, today, once those directions have been established, it is difficult to modify them. At the present time modern armies are not only large in manpower, but also have enormous amounts of supplies. They can no longer operate except in zones to which "trains, tied to the railroad tracks, and motor trucks, tied to the military traffic-controlled highways, impart rigidity. This general condition does not readily permit of sharp or sudden changes of direction; it imposes the necessity of moving according to a direction which has been rather carefully chosen at the outset, and which will maintain a quasi-rigid character." †

Proportioning of Forces

How, then, can the commander in chief concentrate the necessary means on the chosen objective? This will be done by reinforcing the army, or the armies, which are operating in the direction, or directions, leading towards that objective. He "maneuvers" by varying the proportion of forces operating in different, separate directions; this idea must be borne in mind while, at the same time, we must remember that such a maneuver is possible only by intensive use of railroads and of motor trucks organized for that purpose.

Thus, choice of objectives, determination of directions, proportioning of forces, these are the basic factors into which a strategic maneuver can be broken down. At first glance, this appears very simple and Napoleon actually wrote that: "The art of war is a simple art." However, he hastened to add: "and consists entirely of execution. There is nothing vague about it, it all makes good sense, there is nothing of ideology about it."

Combat

The aim of land strategy is to give battle under favorable conditions. Battle is the essential act of warfare. Its repercussions are extensive. It is characterized in modern warfare by the quest for maximum fire power, the effects of which are of a material and a moral nature at the same time. The maximum fire effects can be obtained only from the coordinated fires of all arms—artillery, infantry, tanks and aviation—organized and regulated by the commander in chief. "Attack means fire which results in advance; defense means fire which halts."‡

To fire effects may be added the action of smoke, of mines, and, eventually, of combat gas, which appeared as a new weapon in the last war.

*General Duffour. "Cours de stratégie."
†General Debeney: "La Guerre et les Hommes."
‡Berger-Levrault. "Instruction sur l'emploi tactique des grandes unités."

Defensive Fires

The basic principle of the preparation for defense is the creation of a barrier of fires in front of the position which is to be held.

"The efficiency of this barrier depends upon its density and upon its depth."

"The density of fire is a function of the forces which have been put into the line,"* or, rather, of the weapons which they serve.

However, the fire must be able to maintain its efficiency during the enemy attack. It is therefore necessary to shelter the defenders. The artillery establishes itself in such parts of the terrain as are defiladed from the sight of the enemy's observers. The infantry burrows into the ground in trenches, and so echelons its automatic weapons as to constitute zones of defense rather than lines of defense. This idea of echeloning has much more importance in connection with attacks by means of armored machines.

"The depth of the fire barrier is a function of the range of the weapons."* Starting from the position which is to be defended, it includes:

A zone of infantry fire
A zone of combined infantry and artillery fire
A zone of artillery fire.

If we add thereto the fire from aviation, it will be seen that the attacker can be reached from afar by fire and that, in proportion as he progresses, a fire of increasing density makes it possible to conclude with accuracy when he will be stopped.

Further to insure stopping him, attempts are made to slow up the enemy within the zone of fire by means of destructions and obstacles of all kinds. Of these, a network of barbed-wire is the most efficient against enemy infantrymen.

Such a network is insufficient against an adversary who attacks with tanks. In this case it becomes desirable to use natural obstacles such as streams to cover the defensive position. When such natural obstacles are lacking, it is necessary to create artificial obstacles: ditches, antitank posts, mines and fields of rails, similar to those in front of the Maginot Line.

Depths of Defensive Positions

In spite of all these precautions, if the enemy brings the necessary means into action, there is the risk either of seeing the position forced or, in order to hold it, of being obliged to engage reinforcements in such quantity that the defensive battle will be transformed into a battle of attrition. The defensive thus loses one of its chief values—economy of force.

In order for a defensive to be economical, there exists a procedure which consists in preparing several echeloned positions and in employing them in such manner that the enemy will be unable to know upon which of these the real defense is to be made.

The enemy bombardment preliminary to the attack would thus fall upon a zone which had been practically entirely evacuated. The attacker might perhaps capture it without any difficulties, but he would then come in only to be crushed under the fires of an artillery which was intact and of an infantry which was sheltered in a solid line of resistance.

The disadvantage of such a defense is that it involves consenting to the relinquishment of terrain. In cases where this cannot be done, recourse must be had to permanent fortifications where, with a few men, it is possible to cover a large zone of terrain with very violent fire. Thus is regained the economical defense which we seek.

Continuity

A defensive system will not offer the resistance which is expected of it, if it can be turned by the enemy. The Germans turned the French fortifications on the German frontier in 1914 by passing through Belgium. A continuous front is necessary at the beginning of operations to guarantee the national territory.

Continuity is understood to include continuity of fire and continuity of obstacles as well as continuity of the defensive organizations themselves.

To summarize: the essential factors governing defensive combat are dense and deep fire barrages, depth of the battlefield and continuity of the front. The conduct of this defense will, in most cases, resolve itself into maintenance or into reestablishment of the continuity of that front.

The Problem of Attack—Superiority of Fire

How can a defensive system such as that which has just been described be overcome? How can the problem of attack be solved?

In order for the attacking force to advance and take over that terrain which is a tangible sign of victory, it must silence the fire of the defender. It must gain superiority of fire over the defense. This requires:

First, an attack upon the enemy artillery, or counter-battery concentrations;

Second, the neutralization of the infantry weapons of the defense.

To accomplish these ends considerable means are needed. The World War proved that, in comparison with defense, attack required—per mile—twice as much infantry resources and about six times as much artillery resources. This proportion should be noted because it influences the organization of the land forces and because it leads to the idea that it is hardly possible to take the offensive—with success—unless it can be backed by a heavy industry, operating at full capacity.

Fire superiority over the enemy should be constantly maintained. But, against an enemy disposed in a series of resistances, it becomes apparent that there will be pauses in the fire, necessitated by the forward displacement of the artillery whenever the infantry attack has progressed to the effective limit of the range of artillery. Offensive combat is therefore resolved into actions by successive forces separated by such indispensable periods of delay as may be required for successive preparations.

*Col. Lemoine: "Cours de tactique générale."

Employment of Tanks

Are there any means available to avoid these periods of delay which cause a loss of that element of surprise which is so important in gaining a decision?

What are the possibilities of tanks?

The tank is a war-machine which, by its armor-plate, shelters the combatant from hostile fires. Consequently, prior to the actual assault such fire no longer needs to be crushed. Moreover, since the tank carries the fire into the very ranks of the enemy, the attack is no longer forced to wait upon forward displacement of the artillery system. Does the tank, in view of this fact, constitute the means whereby attack can recover its speed?

This question might have been answered in the affirmative twenty years ago before the development of antitank weapons. But for every new offensive weapon, a defense is eventually developed, and "today the antitank weapon rises before the tank as, during the last war, did the machine gun before the infantry."* The armored machine can no longer go forward over the battlefield with impunity. The wars in Spain and Finland have proved that.

It is now admitted that an offensive action would be carried out by mixed groupings composed of infantry and light tanks, the latter known as infantry accompanying tanks. These groupings would be preceded by more powerful tanks, and this whole combined force would operate under the protection of an artillery system which would spécially devote itself to the destruction of antitank weapons.

Displacement would be by bounds, under the protection of the artillery during the entire time occupied in the interior of the enemy's defensive system, and only after disorganization of that system will it be possible to conceive of an action in depth by armored machines which might then be susceptible of obtaining decisive results.

Although the era of technical surprise, insofar as the tank is concerned, has passed, it is, none the less, an indispensable auxiliary weapon which is destined—like the artillery—to assist the infantry.

Aviation

We must not neglect the very important role which aviation will play in land warfare in intimate liaison with the armies. Aviation will be the long-range "eyes" of the command, the observatory of the artillery, the indispensable scout of the tanks, the lightning-like mass launched upon the remote depths of the enemy to cause devastation and paralysis. It will also act as a shield against similar enterprises on the part of hostile aviation. By its action it will increase materially the potentialities of the other arms.

EQUIPMENT OF THE FRONT

In what has preceded, there stands out a conception of the power of matériel which, in modern warfare, has reached a magnitude whose very possibility was unsuspected in the wars of the past. Putting this matériel into efficacious operation requires a previous equipment of the front, which will permit of flexible and speedy maneuver, offensively or defensively.

For an effective offensive organization of the front, it is necessary to:

—have at one's disposal as many attack zones as possible;

—organize these zones in advance, from the point of view of transportation, of communication, of hospitalization, of evacuation.

For an effective defensive organization of the front, it is necessary to provide for the reinforcement of a given sector without a minimum of time. A reinforcement plan should be prepared by the commanders of groups of armies. The establishment of a plan for military works is the corollary of the establishment of the plan for reinforcements.

The procurement and supply of the necessary matériel of the rear areas is just as important as the equipment of the front lines. Reserve stocks, destined to meet any unforeseen circumstance, must be established. Field and heavy artillery must be supplied with ammunition for several days of fire in addition to the full loads carried by the vehicles of the combat units. The flow of tools and equipment to engineer depots must be maintained. Stores of surfacing materials for repairing roads must be created as far forward as possible.

It is necessary to bear well in mind the role played in modern warfare by preparation. The results obtained in the various phases of the operations are in direct proportion to the completion of the preliminary estimates, to the material means which have been assembled, and to the degree of preparation which has been realized towards putting them into effect.

THE MORAL FACTOR IN LAND WARFARE

Marshal Pétain has written: "In warfare there is one stable element, Man . . . In addition to a very active material preparation, it is necessary to plan for moral preparation." In 1917, while commanding the French armies, he stated: "In all arms and at all echelons, the officers and the men will become increasingly confident of success by realization of the importance of the means which are brought into play. . . . This must impress them to the point where they will be anxious to attack."

Any argument over the relative importance of Morale and Matériel can result only in the realization of the value of each of them. There should be no conflict between the two; materiel is at the service of morale. They are inseparable and the purpose of battle is to break the material power and moral strength of the enemy.

CONCLUSION

Land warfare is of such importance that the greater part of the nation in arms is called upon to devote all efforts to its direct support.

One does not fight with manpower alone, but also with matériel. The growth of mechanization requires highly developed qualities in the operator. It imposes upon the strategist some delicate problems in the conduct of operations in securing the best conditions for the initiation and development of battle.

In order to become a master of military art, which is in a perpetual state of evolution, it is not too much to consecrate to it—throughout an entire life-time—the best part of one's self. Military leaders will do this all the more faithfully when they feel that they have the support and encouragement of the entire nation.

*"Instruction sur l'emploi tactique des Grandes Unités." Berger-Levrault.

Defense Against Armored Vehicles

[Extracts from 1939 *Aide-Memoire de l'Officier de Reserve d'Infanterie*—France. Translation by Lt. Col H. M. Rayner (Cav.) G S.]

By Lieutenant Colonel E. M. Benitez, *Coast Artillery Corps*

At a Distance from the Enemy

Even when at a great distance from the enemy's main bodies, the infantry must anticipate a possible irruption of armored cars or light fast tanks accompanied at times by motorized elements.

In most cases these detachments have a reconnaissance and not a combat mission; they move by large bounds; the armored cars which accompany them generally operate by patrols (3 to 5 vehicles) on the main axes of the road net. These vehicles are often weakly armored and tied more or less to the roads; even when tread vehicles they are unable to operate over all types of terrain, nor at night, they must halt for observation or for firing; finally, they are apprehensive of inhabited localities, routes which favor the creation of ambushes, and of cover which may conceal antitank weapons.

Contact with several armored detachments therefore should not paralyze an infantry column, as it is possible to insure its security even while marching.

On the other hand, the verified approach of numerous mechanized units (Panzer Division) will cause changes in the routes of advance or a general halt (prepared for action) of large columns.

While on the March

(1) Seek information as far out as possible of the approach or proximity of enemy armored vehicles, by means of aviation, cavalry, motorcyclists.

(2) Establish an echelonment in the advance guards, at the head and on the flanks of the columns, fixed antitank posts barring the road net. Hold out tanks to counterattack the enemy vehicles.

(3) Designate the bounds of the units at natural obstacles or emplacements favorable for resistance such as streams, ravines and inhabited localities; eventually establish ambushes thereat.

The antitank defense measures taken by important columns should, to be coherent, be organized by the Commander of the Large Units and especially by the Infantry Division Commanders.

Search for Information

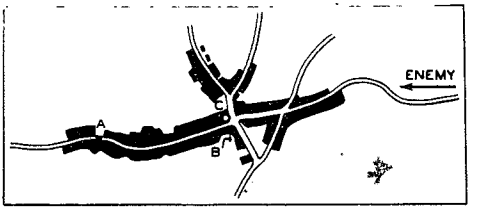
This is conducted by the aviation (army corps organ) and the reconnaissance detachments sent out by the infantry divisions; the infantry regiments, in their turn, make use of their motorcyclist scout section; between infantry units, alert signals (the best are luminous or sound signals such as rockets, Klaxon horns); between the aviation and the infantry, pyrotechnic signals confirm radio or dropped messages

Use of Obstacles (Natural or Artificial)

Infantry divisions in their approach marches fix the bounds of their advance guards and main bodies on natural obstacles which are occupied in case that an irruption of tanks is reported.*

Similar action is taken by the small units forming the advance guards (companies, battalions). They anticipate halts at places favorable for resistance (cover, banks, inhabited places). Near the enemy, when the halt may be somewhat prolonged, they bar the routes completely in both directions (carts placed across the roads), or prepare ambushes.

Example of Ambush



Sketch No. 1

The village appears to be unoccupied; a lookout in tower "C" reports the approach of enemy vehicles. A fixed barricade "A" (wagons) is placed across the road at "A", at the end of the village around a bend in the road or under a crest; riflemen concealed nearby should fire on the car crews attempting to dismount to remove the barricade. A mobile barrier "B" is prepared 110 yards or more above barrier "A" (wagons, farm vehicles, telegraph posts) and put in place after the mechanized vehicles have passed towards "A." Then attack the imprisoned vehicles by grenades, or fire at the eye slits.

When natural obstacles are lacking, the leading elements of the advance guards and columns carry along portable obstacles which are put in place by the regimental pioneers, viz., requisitioned wagons, rolls of wire (Brun) spread rapidly across the roads, portable mines placed on the ground surface, which form instantaneous barriers.†

Antitank armament is echeloned in the advance guards and at the head of the columns of the infantry division. This is formed especially by the 25-mm antitank guns of the leading battalions and by those of the regimental weapons company in the advance guards, by the divisional company and antitank battery for the main bodies of the infantry division by the infantry regimental commanders. The pieces are

*These obstacles limit the successive fields of battle chosen by the Command

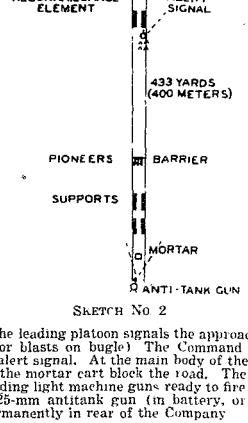
†Rolls of wire form an invisible barrier, lay them across the road without attempting to attach them; even broken they tangle in the treads of the mechanized vehicles and hinder their movement.

Portable mines (11 pounds) are placed on the ground so as to assure effective explosion; if possible, they are concealed behind a road bend or crest; five mines are sufficient to bar an ordinary road, while double that number are necessary to bar a highway.

echeloned to successively interdict, at favorable points, frontal or lateral routes leading to the column; their movement by bounds most often requires the use of "chenillettes" by which they are drawn.

The use of armor-piercing ammunition by machine guns or light machine guns is effective only against weakly armored mechanized vehicles (armored cars); however, its use should not be overlooked, especially in contact operations of advance guards.

Example of Antitank Gun Use



SKETCH NO 2

The C.O of the leading platoon signals the approach of mechanized vehicles (rocket or blasts on bugle) The Command Platoon repeats the conventional alert signal. At the main body of the leading echelon, the pioneers and the mortar cart block the road. The platoons scatter in the ditches, leading light machine guns ready to fire; the alert signal is repeated. A 25-mm antitank gun (in battery, or tractor drawn) bars the road permanently in rear of the Company

The infantry division, for its part, covers the artillery of direct support on the march axes with its own antitank units, which march by bounds in the interval between the main bodies and advance guards; it also assures the flank protection of the division.

Finally, it is advantageous to reinforce the advance guards with tanks armed with cannon (D Type preferably which are able to cover long distances on treads) which follow the infantry on their treads by bounds; they come into action eventually to counterattack enemy tanks which may have broken through.

NEAR THE ENEMY

As soon as the enemy is in contact and the front is stabilized, massive interventions of tanks become possible, especially where the terrain permits such action; these attacks may assume the form of successive waves (the Germans indicate densities of from 110 to 130 tanks per mile in several echelons) and take place on extended fronts; our own attacks may be stopped by the enemy counterattacks supported by tanks.

Antitank Measures during the Gaining of Contact

As soon as contact appears imminent, the commanders of the advance guards advance their antitank elements by echelons so as to permanently constitute a mobile first barrier facing the dangerous directions. The infantry division eventually places divisional antitank fractions at their disposal.

The infantry division with its own means assures the security of the artillery deployment and of the column main bodies.

Antitank Measures in the Offensive

Antitank measures are foreseen even during the preparation of an attack.

The artillery prepares the fires against probable tank assembly points, and destroys located antitank guns.

The infantry organizes an antitank barrage in front of the line of departure (Battalions and Regimental Weapons Company).

The divisional company and battery assure the depth of the dispositions; mines may even be placed.

Harassing night fire (artillery and infantry) hinders the creation of mine fields by the enemy.

During the attack the infantry battalions and regiments engaged form with their own means a first mobile echelon which follows by bounds the leading attack elements.

The infantry division forms a second echelon which covers the important CP's and holds out eventually a reserve of tanks for counterattack.

The artillery assures its immediate security (third echelon).

Antitank Measures in the Defensive

In anticipation of massive attacks of armored vehicles antitank measures assume considerable importance in the defense and are progressively developed as the front stabilizes.

First use is made of obstacles which form at once favorable points of resistance; at the same time, an active defense in depth is formed, especially so along the front. It is thickened towards the rear as soon as the organization of passive zones has decreased the front on which a possible irruption of tanks might take place.

The trace of any position of resistance (main line and reserve line) should, to a greater extent than formerly, be placed on natural obstacles (cuts, ravines, streams, woods, villages); artificial obstacles complete them as soon as possible in order to create passive zones. The determination of these lines and of these zones (passive and active) pertains normally to the division commander. The establishment of the artificial obstacles pertains to the infantry as far as abatis (at the edge of permeable woods), triangular or trapezoidal ditches (by the regimental pioneers) are concerned; but the flooding of areas, establishment of mine fields (shells placed in checkerboard fashion preferably on reverse slopes concealed from the enemy artillery observation), smoke screens, tank traps (camouflaged ditches at crossing points), all require an amount of personnel, which the large units alone can furnish, and considerable time.

Barrage fires by 25-mm or 75-mm cannon are echeloned in rear of the main line of resistance. The following are normally contemplated:

A discontinuous echelon at the outpost, in order to dislocate a massive irruption of tanks;

A continuous main barrage in front of the main line of resistance;

Interior barrages;

A barrage in front of the reserve line covering the C.P's;

A rear barrage covering the artillery.

Mines, concealed from view (cover, reverse slopes) are placed in groups or chains, according to the location of fires and cover (three-fourths mile requires 1500 mines and the work of 20 men during 8 hours. Work is performed by the regimental pioneers and the Regimental Weapons Company).

Tanks armed with cannon constitute a mobile reserve to counterattack the armored vehicles which might have succeeded in penetrating the position.

General Organization of the Defense

This is prepared by the infantry division.

The infantry regiments engaged are generally charged with the organization of the first barrages as far as the reserve line inclusive; they are reinforced by elements (platoons) from the division antitank company, which is preferably used on the reserve line.

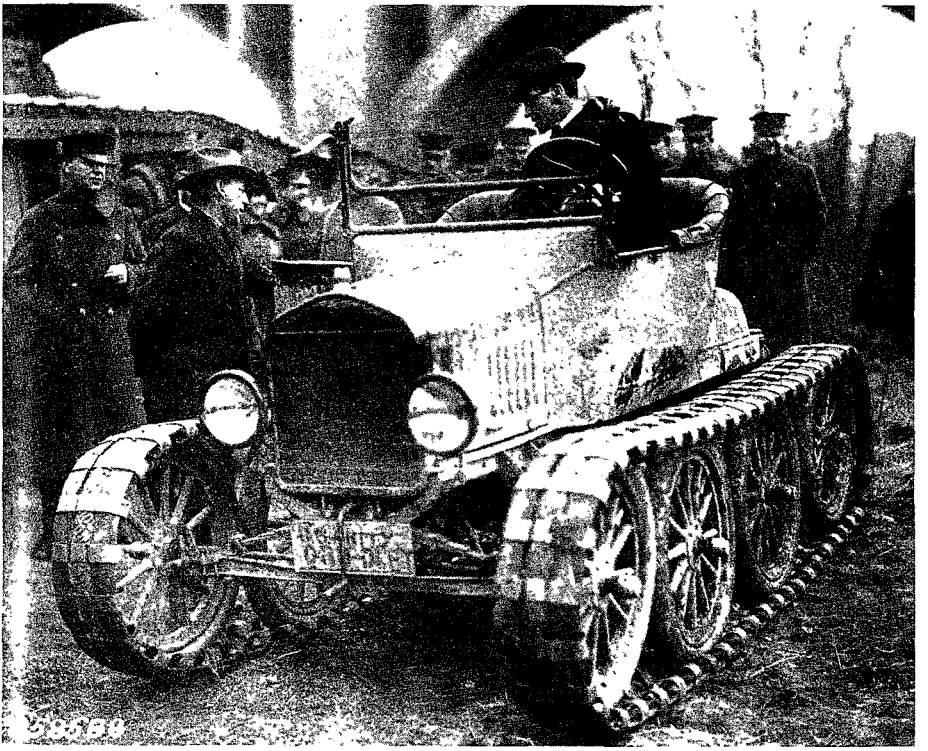
The pieces are distributed in "platoon nests" in closed strong points.

The organic 75-mm artillery regiment prepares the rear barrage; it is normally reinforced by the division antitank battery which is held grouped and not dispersed.

The emplacement of mine fields is communicated as soon as possible to the commanders of the division infantry and artillery.

The infantry division controls the action of the artillery and the launching of the tanks in counterattacks.

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SECRETARY OF WAR BAKER IN FORD RECONNAISSANCE CAR 8 FEBRUARY 1921 *USA Signal Corps*

Book Reviews

SOLDIERS IN THE SUN

By Captain William Thaddeus Sexton

297 pages . *Harrisburg, Pa . Military Service Publishing Company*

Reviewed by Major Thomas R. Phillips, Coast Artillery Corps

To the average American, the Spanish-American War ended with the treaty of peace with Spain. He does not know that the United States then had to conquer the Philippine Islands, which revolted immediately against American overlordship. Captain Sexton's book is a fascinating, objective and accurate history of the American conquest of the Philippines. It is the first and only history of the Philippine Insurrection.

The conquest required four years, during which 126,468 soldiers and officers were transported over 7,000 miles from their homes It cost the lives of 4,234 American soldiers and officers, the death of some 16,000 Filipinos in 2,811 engagements, and resulted in the extinction of some 100,000 Filipinos from famine and pestilence Indicating American ignorance of the task to be accomplished is the recommendation of General Nelson A Miles, senior officer in the Army at that time, that the expedition consist of about 5,000 men, four-fifths of whom were to be volunteers.

Captain Sexton has written history as it should be written He has no bias and takes no sides The reader can draw his own conclusions from the facts given. This reader concludes that Aguinaldo, the Filipino patriot, was tricked into supporting American activities against Spain by promises of independence, both direct and implied, by the American Consul General at Singapore, Mr. E Spencer Pratt, and Admiral Dewey When he found that these promises were not going to be kept and had been given without authority, Aguinaldo revolted against United States just as he previously had against Spain.

Volunteer officers and soldiers can be seen to have performed equally as well as Regulars. The volunteer, Funston, finally captured Aguinaldo. The higher commanders were mostly Regular officers who insisted upon strict obedience to regulations

Rations became the property of the company at ship side. In the hazardous journey from ship to shore, rations occasionally were lost from the capsizing of small boats. No more were allowed to be issued until a board of officers could act. That the soldiers were without food while routine pursued its iron-bound course was of minor importance compared to proper conduct of paper-work. Even Admiral Dewey was loath to open the doors of his refrigerator ship except at stated intervals.

The Filipino proved himself to be no mean antagonist and never lacked in courage Half of them were without arms, so their superior numbers frequently were not a real superiority. American rifle marksmanship was much superior to that of the Filipinos and this proved a tremendous advantage. The Filipino who stuck his head above a trench was almost certain to be hit and this finally resulted in the Filipinos putting their rifles over the trench and firing without aiming

The Philippine Insurrection could have been ended in a few months with active and competent leaders. The timorous course pursued and the constant limitations imposed on commanders in the field destroyed the initiative of subordinate commanders and prevented them from taking advantage of opportunities that were offered.

Bravery and patrooneryy of friend and foe are both set forth. We find a company of American Regulars surrendering without firing a shot. We find junior officers later to become famous, such as Pershing, Harbord, McCoy, Preston Brown, and Bullard, exhibiting the same great qualities they later were to show in command of corps and armies. *Soldiers In The Sun* is as interesting as a romance, not alone to the soldier, but to every American. Captain Sexton has rendered a public service in producing this book.

PERISH BY THE SWORD

By R. Ernest Dupuy

302 Pages . . . Harrisburg, Penna.: The Military Service Publishing Company

Reviewed by Major William H Speidel, Infantry

As we read today of the Russian operations against Finland in the area west of the Murmansk Railway, wondering perhaps whether the forces engaged are peculiarly adapted to enduring the hardships of war under conditions where the temperature is often forty degrees below zero, few of us will realize that in 1918 and 1919 an American expedition operated under similar conditions. Just why American troops participated in the Archangel Expedition and the reason for the operations of the A. E. F. in Siberia under General Graves from Vladivostok to Lake Baikal are problems which many students of the World War never solved. Major Dupuy, in *Perish by the Sword*, answers all the questions After the signing of the treaty of Brest-Litovsk there ceased to be an eastern front, a situation which enabled Germany to increase her concentrations in the west In order to recreate an eastern front the Allies seized upon the opportunity offered by the formation and development of the Czecho-Slovak force, known as the *Czeska Druzina*. The route toward the west was blocked by the Germans. To return this force of some 40,000 men to the Western Front they would have cross Siberia, so on 3 March, 1918, Masaryk ordered them to Vladivostok. In extricating themselves from the trap there was considerable fighting against the Bolsheviks; a situation was developing which would be of advantage to the Allied cause

because it would necessitate the demand for supplies and matériel in Russia and thus prevent their acquisition by Germany. Masaryk was prevailed upon to keep the *Czesko Druzina* in Russia. This force proceeded in its attempt to conquer Siberia and the "longed-for eastern front was re-established."

What part the American expeditions played in establishing a rallying point for the Czech troops in Russia, in guarding stores which had been assembled for the Imperial Russian armies, in preventing the establishment of German submarine bases and the assistance rendered the Czechs in the greatest anabasis in history are all ably presented by Major Dupuy in his thrilling account, well documented, carefully indexed and generously illustrated. The many personal experiences undergone by the American officers and enlisted men involved are impressive of the courage and resourcefulness of the American soldier faced with trying and difficult situations. The entire affair is "the most topsy-turvy, irrational drama of cross-purposes that a fever-racked brain could imagine." To organize the material and embody it in a digestible form must have been a tremendous task

THE SECOND WORLD WAR
First Phase

By Duff Cooper

346 pages . . . New York: Charles Scribner's Sons

Reviewed by Major William H. Speidel, Infantry

Duff Cooper had been Secretary of State for War but, when Chamberlain formed his cabinet in 1937, he was transferred to the office of First Lord of the British Admiralty. Disagreeing with Mr Chamberlain over the results of the Munich agreement, he resigned Since then he has written and spoken considerably on matters pertaining to British foreign policy and world affairs, including a number of appearances before American audiences *The Second World War* consists largely of Mr. Duff Cooper's speeches and articles in the year preceding the outbreak of the war. In the light of events which followed the final chapter, the book is remarkably prophetic

Mr Cooper deals frankly in his criticisms of British policy both before and after the opening of the war. In his opinion the failure of Great Britain and France to gain the support of Russia resulted in the outbreak of the present war He had claimed "that the only way to prevent the war was to convince Germany that she would lose it" When Germany became assured of Russian neutrality "this was no longer possible." The way had been prepared and "she felt then that the risk could be taken. . So ended the period of unopposed aggression and bloodless victory The second world war entered upon a new phase."

'THE BRITISH WAR BLUE BOOK
Miscellaneous No. 9 (1939)

Presented by the Secretary of State for Foreign Affairs to Parliament

251 pages . . New York: Farrar and Rinehart

Reviewed by Major William H Speidel, Infantry

The volume contains the documents concerning the German-Polish relations and the outbreak of hostilities between Great Britain and Germany, 3 September 1939. It also includes the *British White Paper*, Germany No. 1 (1939), an appendix (pages 251 to 282), covering Sir Neville Henderson's final report on the circumstances leading to the termination of his mission to Berlin.

A study of these papers will enable the reader to follow the development of those conditions which effected the widening of the breach between London and Berlin, and the useless efforts by other powers to intervene Here are the telegrams exchanged by Lord Halifax and the British Ambassadors in Germany and Poland, the documents which indicate Britain's desire for a settlement as well as her determination to fight in defense of Poland, and the German speeches and proclamations which express Germany's fear of encirclement and her demand for a free hand in the East .

The value of this book is enhanced as a reference work by the inclusion of an elaborate table of contents and a brief summary of the documents.

CAN AMERICA STAY NEUTRAL

By Allen W Dulles and Hamilton Fish Armstrong

277 pages . New York Harper & Brothers

Reviewed by Major William H. Speidel, Infantry

In the production of this book the collaborators have employed certain sections of their book *Can we be Neutral*, published in 1935, to which they have added a historical record of American neutrality legislation and experience which have transpired subsequent thereto They present their appraisal of the various proposals which have been offered as a guarantee to the protection of American neutrality A point upon which they lay great emphasis is that "the popular American conception that neutrality is a clearly defined status is erroneous"

The authors cover a brief review of American neutrality in the early days of our country, and the contributions made by Washington and Jefferson toward establishing a definite policy They likewise present a digest of the policy of American neutrality during the period 1914-1917, which they conclude with the warning—"If we wish to enforce those rights we must use our Army and Navy"

MEN IN BATTLE

By Alvah Bessie

354 pages . . New York Charles Scribner's Sons

Reviewed by Major William H. Speidel, Infantry

Men in Battle is the story of the International Brigade and that varied assortment of American volunteers known as the Lincoln Battalion. Alvah Bessie had gone to Spain as an International volunteer early in 1938 and took part in the retreat to the sea and the offensive of the Ebro River. He tells the story as he and the members of the Lincoln Battalion personally experienced it. Regardless of our personal opinions concerning the general character of the

men who composed this group of American volunteers, it must be conceded that the book has a definite value as a record of human experience in war.

There are no literary embellishments and no attempt is made to romanticize the Lincoln Battalion. Roughnecks and saboteurs, brave men and cowards; all of them lumped together into a mass of unusual soldiers that seem to be ever conscious of what they are fighting for. There is much conversation and the speech is rather coarse but effective in its production of terrifying impressions. The narrative dealing with the holding of Hill 666 on the Ebro is a close up study of raw material in battle

LES ENSEIGNEMENTS AERIENS DE LA GUERRE D'ESPAGNE

[Lessons Derived from Aerial Warfare in Spain.]

By Camille Rougeron

248 pages . Paris, Berger-Levrault

Reviewed by Captain A. L. Keyes, Field Artillery

The experiences of the Spanish Civil War are not all-inclusive. Both sides were reluctant to use poison gases and incendiary bombs. Both Germans and Italians furnished the Nationalists with materiel limited in quantity and quality and kept their latest weapons a secret to their allies as well as to possible enemies. Nevertheless, many new trends can be noted with accuracy and many old ones confirmed as has been done in this careful and scientific study of the recent war.

Both air and antiaircraft matériel and operations are analyzed and conclusions drawn. These are too numerous to list and too involved to discuss but it is believed that the book will furnish a valuable addition to recent publications on this subject. The author is a man of scientific attainments and an experienced student of his subject

ABRAHAM LINCOLN

The War Years

By Carl Sandburg

2502 pages (Four volumes) New York Harcourt, Brace & Co.

Reviewed by Major William H. Speidel, Infantry

The name of Carl Sandberg will always be closely associated with that of Abraham Lincoln. Perhaps no one person is better qualified to present to posterity that panorama of historic highlights and shadows through which Lincoln moved as a mysterious character of American folklore. As a boy, Sandburg knew Lincoln's neighborhood and the men who had been closely associated with the Great Emancipator. He gathered material from every available source until his library contained more than two thousand volumes and manuscripts on Lincolniana. Fifteen years of exhausting and conscientious research went into the production of *The Prairie Years* and an additional thirteen years were required to assemble the material for the last four years of Lincoln's life—*The War Years*.

The War Years starts where *The Prairie Years* ended. The President Elect and his party have entrained at Springfield, Illinois, and have commenced their eleven-day journey to Washington. The nation is on the threshold of a great endurance test through which it is to be guided by the patient hand of Lincoln. Perhaps these volumes add little to what is already known of the period of Lincoln's Presidency. There is little that can be added to the assembled facts. Their chief value, however, lies in their contribution in presenting a human and revitalized character in a literary biography so comprehensive and so precise that we may assume that there is little more to be said regarding President Lincoln and his contemporaries than that which Sandburg has produced.

The research scholar may be disappointed to find that, in spite of the 414 halftones from photographs and 249 reproductions of cartoons, letters and documents, these volumes contain no footnotes, appendix or bibliography. For satisfaction he need but reflect upon the rare quality of the biographer, or else take recourse through reference to the record of assembled facts. The reader will find that he spends little time on the battlefield, although the engagements of the Civil War are concisely summarized within the body of the story. Tactical considerations are not involved, as the subject is devoted to the qualities of statesmanship of the principal character.

THE HERITAGE OF AMERICA

Edited by Henry Steele Commager and Allan Nevins

1,152 pages . Boston Little, Brown and Company

Reviewed by Major William H. Speidel, Infantry

The editors of this autobiography of America—realizing "how much history has been made in America since the first explorers and colonists reached its shores; how broad, how richly multiform, how full of adventure, drama, and color this history has been"; and also "how much of this history has been written by actual participants and observers; how many thousands of racy, vivid, and veracious narratives have been penned by the settlers, the soldiers, the traders, the boatmen, the gold hunters, the fur trappers, the railroad builders, the merchants, the educators, the preachers, the politicians"—set about to produce a broad survey of this great mass of historic events, told through the words, mainly, of men and women who were there at the time the events took place. The fruits of this tremendous task is presented as such in *The Heritage of America*.

The bibliography of 252 listed sources may give some idea of the vast amount of material which is included within the pages of this single volume. The panorama opens with the voyage of Leif Ericson to Vineland and the discovery of America by Christopher Columbus and expands quite rapidly until after the War of 1812. Then, as the events of American history seem to grow more complex, subjects are picked out. These subjects cover such events and incidents as whaling, steamboats, early American social life, the re-

forming period, the westward movement, the Civil War, the conquest of the West, the development of cities and industries, the Spanish War, the World War, Franklin D. Roosevelt and the W. P. A.

The material is presented from original sources wherever possible. The editors make no comments and draw no conclusions. The reader has the advantage of first-hand information and is permitted to form his own opinions.

KEOGH, COMANCHE AND CUSTER

By Edward S. Luce

127 pages . . . Saint Louis, Mo.: John S. Swift Co., Inc.

Reviewed by Major William H. Speidel, Infantry

Captain Edward S. Luce is the commander of the Seventh Cavalry *Garry Owen* Veterans. Prior to his retirement he served in the Seventh Cavalry for many years, an experience that inspired him later on to present to the public in book form the story of the three personalities responsible for the *Garry Owen* tradition. The results of his diligent research among the historical files and records of the Seventh Cavalry have given us facts about these characters heretofore unknown, or else colored sensationally by debunking authors whose exaggerated accounts have no foundation in factual history.

Comanche is the central character, whose life is influenced by the romantic careers of two great cavalrymen—Captain (Brevet Lt. Col.) Myles Walter Keogh and Brevet Major General George A. Custer. Though only a cavalry mount, Comanche becomes a great personality in the life of Captain Keogh, who purchased and trained him and remained his close companion until he fell with Custer in the Battle of the Little Big Horn. Comanche lived on and became the "second commanding officer of the Seventh Cavalry," finally dying in mellow old age at Fort Riley, Kansas, November 6, 1891.

All the world knows about Custer's Last Stand, but it does not know about the parts played in this tragedy by Captain Keogh, whose courageous stand caused the Sioux Chief Red Horse to claim that Keogh "was the bravest man the Sioux ever fought," and Comanche, the only living survivor of the battle. Unfortunately, it also knows much about Custer which the records indicate to be gross exaggerations. This is not only an intensely human story, but a valuable, documentary contribution to the history of our Indian Wars.

THE HUNDREDTH YEAR

By Philip Guedalla

312 pages . New York, Doubleday, Doran & Company, Inc.

Reviewed by Major William H. Speidel, Infantry

Philip Guedalla has selected the hundredth year following the coronation of Queen Victoria in which to present a phase of contemporary British history, a period marked by a great climax and by momentous events of transition in the destiny of the great empire. It was the year in which Germany reoccupied the Rhineland, Italy triumphed over Ethiopia, Spain became involved in a civil war, President Roosevelt became reelected and Edward VIII abdicated the royal and imperial throne of Great Britain. These events form the pattern upon which he has constructed his historical drama, but the principal theme about which everything else revolves is the abdication of the king.

Mr. Guedalla relates the story of the events which led up to the abdication with great warmth, understanding and pathos. The other events which are simultaneously taking place merely form a shadowy background for the principal characters in their movements across the stage in the tragic anticipation of the grand climax. The point of view is that of a friend of the king, of one who knew the story in intimate detail and of one whose sympathy enabled him to tell it with delicate treatment and discretion.

In the light of recent events, the emphasis on politics now seems somewhat distorted, but that is a criticism which might be attached to much that was written before the closing days of August, 1939. The author has presented a phase of British history that should not be slighted or overlooked.

IF NOT VICTORY

By Frank O. Hough

335 pages . New York: Carrick & Evans, Inc.

Reviewed by Major William H. Speidel, Infantry

If Not Victory is a story of the American Revolution along the Hudson River in the vicinity of New York and Westchester County. The tale is woven about the episodes of three Westchester boys who join up with a company of New York volunteers—the Westchester Guides. Mr. Hough assures us that the principal characters are real people and that the source upon which the episodes are based is authentic. Abe Kronkhyte, the principal character, wavers between joining the cause of the Loyalists or becoming a revolutionary. Finally, however, he becomes thoroughly devoted to the cause of the new American nation. He realizes that this is his country, and the people are his people.

The novel indicates that the author has devoted much time to a careful study of the history of the American Revolution, the character of the people of that period, and the nature of the country in and about Westchester County.

Library Bulletin

Books Added to the Library Since December 1939

Abend, Hallett — **Chaos in Asia** 1939 [915-A]

American Academy of Political and Social Science

Freedom of inquiry and expression A collection of facts and judgments concerning freedom and suppression of freedom of all types. (Contributions by [The Annals, November 1938 — 1938 : 824-I]

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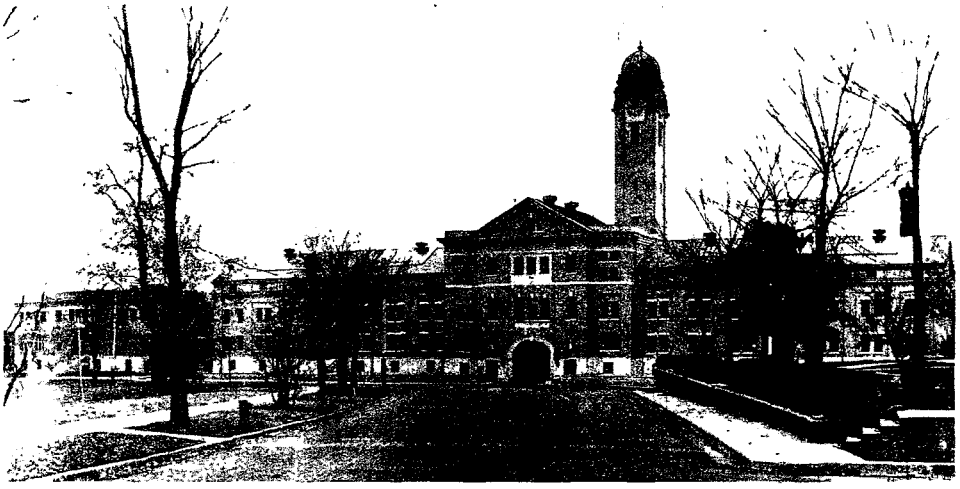
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Notes on the Organization and Employment of Mechanized Cavalry

By Major R. S. Ramey, *Cavalry*

1. Introduction. In every walk of life it is a common failing to become so engrossed with our immediate problems that we are indifferent to events or developments which influence materially our own affairs. Or, recognizing them, we calmly ignore current happenings until their import is abruptly, sometimes brutally and tragically, thrust upon us. We in the military profession are not immune to this same laissez-faire attitude.

A number of recent occurrences, abroad and at home, should have served to shake officers of the Army of the United States out of the lethargy which results from routine peacetime training. Events of the past few months should have awakened us to the necessity for orienting and acquainting ourselves with respect to the full implications of mechanization, one phase of which is mechanized cavalry as developed in our Army.

As an object lesson we may regard at a distance the amazingly rapid conquest of Poland by German forces in September, 1939, for which a major share of the credit is directly attributable to mechanized forces comparable to our own mechanized cavalry. Coming closer to home, we have the recent First Army Maneuvers at Plattsburg, New York, where, in most difficult terrain, the implications of the demoralizing ability of the 7th Cavalry Brigade, Mechanized, was uncomfortably brought home to many of the other units and individuals.

If our Army is to be trained properly and adequately, leaders of every grade must have a general knowledge of mechanized cavalry. It is with this in mind that the present article is written to provide, especially for those officers who have not had the opportunity of observing it, a general appreciation of the composition and method of employment of mechanized cavalry in the United States Army.

2. Types. *Mechanized Cavalry* is a component of the Cavalry Arm organized and equipped for the express purpose, on favorable terrain, of extending the sphere of action of cavalry to much greater distances and of increasing the speed of performance of the usual fundamental mission of cavalry. The principal item of equipment of mechanized cavalry consists of armored, self-propelled motor vehicles, designed for combat. On each of the mechanized cavalry combat vehicles are mounted weapons of various calibers. Broadly speaking, mechanized cavalry comprises units as follows:

a. Self-contained mechanized cavalry regiments or brigades capable of operating independently or semi-independently.

b. Essentially reconnaissance units such as the mechanized reconnaissance squadrons contained in the Cavalry Division and the Composite Corps Cavalry Regiment.

c. Small mechanized reconnaissance groups such as the Scout-car Platoon, organic in each horse cavalry regiment.

In this article, however, we are concerned primarily with the first type, i.e., the larger self-contained mechanized cavalry units such as the regiment and brigade and their components.

3. Doctrine of Employment. The application of mechanization to cavalry has been along lines to enable the arm better to carry out its prescribed tactical and strategical functions. The motor vehicle has been substituted for the horse with a corresponding increase in the speed of movement and distances to which units can be sent. The fundamental missions of mechanized cavalry are the accepted missions of cavalry.

Mechanized cavalry units are equipped with special type armored vehicles which require time to produce or replace. The personnel is highly specialized and requires time to train. Operating against modern antitank weapons, vehicle as well as personnel casualties may be comparatively great. Consequently, these considerations dictate that mechanized cavalry units should only be assigned important missions which other available troops cannot satisfactorily execute.

Again, the effectiveness of mechanized cavalry will usually be greatly enhanced by its surprise employment. To gain this desired surprise it is important that the terrain permit the utilization of the inherent mobility to close rapidly with the enemy and utilize the shock and fire power of the units before the hostile force is able to dispose antitank weapons or shift other forces to protective dispositions.

The mobility of mechanized cavalry units enables them to move relatively long distances under cover of darkness, either from a distance in rear or from one flank to another of large forces. In this manner both strategical as well as tactical surprise may be gained.

As we will see when we consider the organization of units, the inherent mobility, the comparative speed of movement on roads or cross country either in the march to contact or in the actual attack, demands positive measures to control units and rapid functioning of leaders. Otherwise, units may disperse rapidly. And if leaders are slow with decisions and orders, the opportunity for surprise will be lost. These considerations have materially influenced the organization and composition of mechanized cavalry units. Especially have they dictated ample, rapid organic means of reconnaissance, communication and supply.

4. Principles of Organization. *a.* The doctrine that mechanized cavalry should extend the sphere of action to much greater distances and increase the speed of performance of accepted cavalry missions has demanded self-contained tactical units. Independent or semi-independent operations require that the larger units be self-contained administratively as well as tactically. These conditions are met by providing certain equally mobile, auxiliary tactical and administrative elements. These organic supporting elements are: command, reconnaissance, fire-support, communication, and service units. While the mechanized cavalry regiment contains some of these required auxiliaries and can, therefore, operate on limited independent missions, the reinforced mechanized cavalry brigade is the unit in which is incorporated all of the auxiliary means necessary for execution of distant independent missions.

b. Before examining the detailed composition of mechanized cavalry units, let us view the broad features. Basically, the organization of mechanized cavalry provides for:

(1) Powerful striking and holding elements which can be grouped into several combat teams.

(2) Reconnaissance elements, both ground and air, capable of rapid distant reconnaissance.

(3) A system of command and communication, including a very specialized voice and key radio system, capable of controlling highly mobile and widely separated elements.

(4) An adequate mobile system of supply and maintenance.

(5) Supporting arms and services such as artillery, engineers, signal, and medical troops so equipped as to be equally as mobile as mechanized cavalry.

c. The *basic combat vehicle* of mechanized cavalry is the combat car. Grouped either in the regiment or the reinforced brigade are fire support elements such as artillery, mortars, rifle and machine guns (both caliber .30 and .50), the combination of which with combat-car units make effective combat teams.

d. The basic combat unit is the platoon.

Keeping in mind these general principles of organization, let us examine in some detail the mechanized cavalry brigade and its component units.

5. MECHANIZED CAVALRY BRIGADE. — *a. General.* — Under recently proposed tables of organization for the brigade, the largest mechanized cavalry unit, it is to be constituted as follows:

CAVALRY BRIGADE MECHANIZED (Peace)

COMMAND ECHELON
- Brigade Headquarters, Headquarters Troop and Band
- Signal Troop
- Reconnaissance and Support Squadron composed of:
 - Headquarters
 - Motorcycle Troop
 - Machine-gun Troop
 - Reconnaissance Troop
- Observation Aviation Squadron (Separate) (Not organic, normally attached)

COMBAT ECHELON
- Engineer Troop
- 2 Mechanized Cavalry regiments, each containing
 - Regimental Headquarters and Headquarters Troop
 - Service Troop
 - Reconnaissance Troop
 - Machine-gun Troop
 - 3 Combat-car Squadrons, each of two combat-car troops
- Mechanized artillery battalion comprising.
 - Battalion Headquarters, Headquarters Battery and Combat Train
 - 4 75-mm Howitzer Batteries, each of six 75-mm Howitzers

SERVICE ECHELON
- Ordnance Maintenance Company
- Quartermaster Maintenance Company
- Medical Company
- Attached Medical (with each major subordinate unit).

The grouping under echelons is in accordance with tactical functioning only.

b. Let us examine briefly each of the component echelons of the proposed brigade. *The Command Echelon is composed of:*

(1) The Brigade Headquarters and Headquarters Troop and Band composed of:

(a) The Brigade Headquarters consists of, Commander, two aides, Executive, S-1, S-2 and assistant, S-3 and assistant, S-4 and assistant, Brigade Motors Officer

(b) The Brigade Headquarters Troop (4 — O, 1 — WO, and 147 EM). The troop commander is also Headquarters Commandant. The troop contains:

- Headquarters and Staff Platoon
- Intelligence Platoon
- Supply and Transportation Platoon
- Pioneer and Demolition Section
- Band (attached for administrative purpose)

(2) The Signal Troop (4 — O, 111 — EM). The commander of this unit as Brigade Communication Officer supervises the training of communication personnel and coordinates the employment thereof.

(3) The Reconnaissance and Support Squadron consisting of:

- Squadron Headquarters (3 — O, 8 — EM)
- Motorcycle Troop (6 — O, 176 — EM) of
 - Troop Headquarters
 - 4 Platoons, one or more of which will be equipped with 3x2 motorcycles while the other platoons will have solo motorcycles.
- Machine-gun Troop (6 — O, 188 — EM), consists of
 - Troop Headquarters
 - 4 Machine-gun Platoons
- Reconnaissance Troop (6 — O, 14 — EM), comprises.
 - Troop Headquarters
 - 4 Scout-car platoons (4 scout cars each)

(4) The Observation Aviation Squadron (Separate) (30 — O, 150 — EM) contains three flights of 4 planes each and certain supply, transportation, armament, communication and photographic means to enable it to operate separately; operating strength, normally 10 planes. While not an organic unit of the brigade, it is an *essential* normal attachment.

c. The Combat Echelon of the brigade comprises:

(1) An Engineer Troop (4 — O, 128 — EM), consisting of:

- Troop Headquarters
- 2 Operating Platoons

(2) Two Cavalry Regiments (each of 64 — O, 1050 — EM), each organized as follows:

(a) Regimental Headquarters and Headquarters Troop (12 — O, 124 — EM) containing:
- Regimental Headquarters
- Troop Headquarters
- Staff Platoon
- Communication Platoon
- Mortar Platoon

(b) Service Troop (4 — O, 98 — EM) comprising:
- Troop Headquarters
- Supply Section
- Transportation Platoon
- Maintenance Platoon

(c) Reconnaissance Troop* (6 — O, 114 — EM) consisting of:
- Troop Headquarters
- Four reconnaissance platoons of 2 sections of two scout cars each

(d) Machine-gun Troop† (6 — O, 183 — EM) composed of.
- Troop Headquarters
- Three Machine-gun Platoons
- One Rifle Platoon

(e) Three Combat-car Squadrons (12 — O, 177 — EM) each containing.
- Squadron Headquarters (2 — O, 9 — EM)
- Two Combat-car Troops (5 — O, 84 — EM) each of which comprises:
 - Troop Headquarters (1 — O, 44 — EM)
 - Four Combat-car Platoons (1 — O, 10 — EM) (3 combat cars each)

(3) A mechanized artillery battalion (32 — O, 767 — EM) composed of:

- Battalion Headquarters, Headquarters Battery and Combat Train
- Four Batteries (of six 75-mm Howitzers each) Each battery containing:
 - Battery Headquarters.
 - Three platoons of two howitzers each and a fourth platoon containing an ammunition section and a maintenance section

d. The Service Echelon of the Mechanized Cavalry Brigade comprises:

(1) An Ordnance Maintenance Company, for the repair and higher echelon maintenance of the weapons and *combat* vehicles of the brigade.

*Not to be confused with the Brigade Reconnaissance Troop which is an organic unit of the Reconnaissance and Support Squadron.

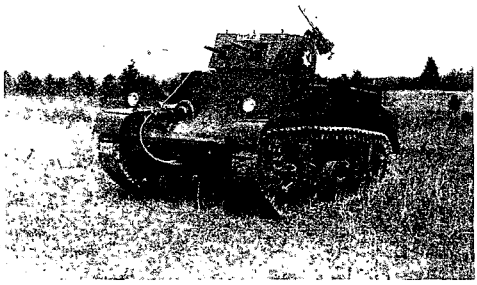
†Note that this is the Machine-gun Troop of each regiment. The brigade commander also has a Machine-gun Troop in the Reconnaissance and Support Squadron.

(2) A Quartermaster Maintenance Company for the repair and higher echelon maintenance of the *supply* and *administrative* vehicles of the brigade.

(3) A Medical Company to assemble casualties, provide ambulance service and limited hospital treatment pending evacuation of casualties by higher echelon.

(4) Over and above the Medical Company there is medical personnel (both officers and enlisted) attached to each of the major components of the brigade.

e. Flexibility of organization.- The organization of the mechanized cavalry brigade is along lines which will permit the subdivision of the whole into temporary organizations or combat teams. Thus, two or more combat teams, comprising the organic mechanized cavalry combat element with attached reconnaissance, fire support, engineer and medical elements may be formed and operate simultaneously either in cooperation or on separate missions.

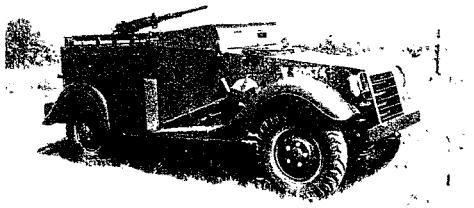


MECHANIZED CAVALRY COMBAT CAR U.S. Signal Corps

6. ARMAMENT, TYPES AND TACTICAL USE OF VEHICLES

a. The Combat Car is the principal fighting or assault vehicle of mechanized cavalry. It is an armored, track-laying vehicle with turret and carries the following machine guns:

1 caliber .50 machine gun in turret
1 caliber .30 machine gun in turret
1 caliber .30 antiaircraft machine gun
1 caliber .30 machine gun in bow
1 caliber .45 sub-machine gun for close-in vehicular defense



MECHANIZED CAVALRY SCOUT CAR U.S. Signal Corps

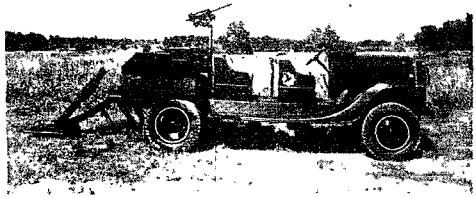
Used for reconnaissance, as command cars, and personnel carriers, each regiment of Regular Army horse cavalry has a platoon of scout cars, and the Mechanized Squadron of the Composite Corps Reconnaissance Regiment is to be equipped with similar vehicles.

b. The Scout Car is an armored, four-wheeled-drive vehicle without turret intended for two main purposes.

(1) Used as a reconnaissance or command vehicle it is equipped with the following machine guns:

1 caliber .50 machine gun
2 caliber .30 machine guns (one for antiaircraft)
1 caliber .45 sub-machine gun for close-in vehicular defense

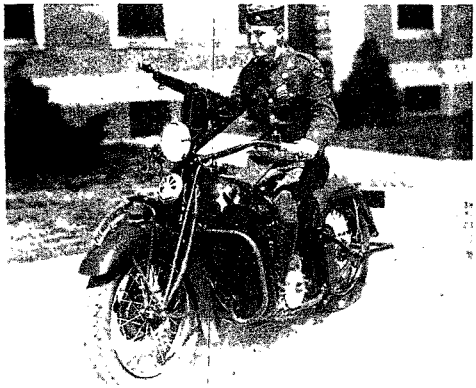
(2) *The Scout Car* used as a personnel carrier in the Machine-gun Troops carries the same weapons as in *b* (1) above, together with the necessary ground mounts for both the caliber .30 and .50 machine guns.



MECHANIZED CAVALRY MORTAR U.S. Signal Corps

As a defense against hostile antitank guns, each regiment of Mechanized Cavalry is equipped with six 4.2-inch rifled mortars

c. The Mortar Carriage is a modified scout-car chassis which carries one 4.2" mortar mounted on the vehicle and one caliber .30 machine gun for the protection of the crew.



U.S. Signal Corps

MOTORCYCLE SCOUT OF MECHANIZED CAVALRY EQUIPPED WITH THOMPSON .45 CALIBER SUB-MACHINE GUN

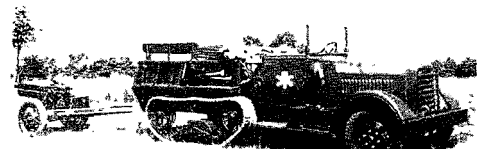
d. Each motorcycle, both solo and 3x2, carries one caliber .45 sub-machine gun mounted on the machine for use when in motion. The weapon can be removed and used by the driver away from the vehicle. The 3x2 motorcycle may carry additional

fire power in the form of either one caliber .30 machine gun or a semi-automatic rifle for each enlisted member transported.

e. The artillery, half-track vehicle, with front-wheel propulsion as well as in the half-track, has armor similar to that of the scout car. It is dual purpose: (1) to tow the 75-mm howitzers and (2) to carry howitzer crews, reconnaissance personnel and ammunition.

f. Administrative vehicles for the most part consist of four-wheel-drive trucks of commercial design and capable of relatively great sustained road speed but very limited movement off roads. They are grouped generally according to their use as follows:

(1) 2½-ton trucks (4x4) used as cargo vehicles with mechanized cavalry regiments.
(2) 2½-ton trucks on which are mounted unit kitchens, capable of preparing hot meals while in motion.
(3) 1½-ton trucks (4x4) in maintenance platoons of cavalry regiments, in artillery battalion as cargo vehicles.
(4) Ordnance and Quartermaster wreckers for various salvage operations.
(5) Special converted trucks ¼-ton, 1½-ton and 2½-ton types used by the Ordnance, Quartermaster Companies and Signal Troop as machine shops, parts vehicles, office trucks and other special uses in maintaining and repairing the equipment of the mechanized cavalry brigade in the field.



MECHANIZED FIELD ARTILLERY

A 75-mm howitzer with its prime mover.

Each group of administrative vehicles is provided with a limited number of caliber .50 and .30 machine guns and semi-automatic rifles for their immediate ground defense and protection against air attack.

7. CHARACTERISTICS AND INFLUENCE ON EMPLOYMENT. *a Capabilities.* The following factors have a bearing on the capability of mechanized cavalry:

(1) *Mobility*, one of the outstanding features of mechanized cavalry, enables units to move relatively great distances in a short time either on roads or cross country. Proper exploitation of this capability permits the utilization of units at an unexpected time in an unlooked for locality. This capability permits either tactical or strategical surprise.

(2) *Fire power.*—The tremendous volume of fire power from organic automatic weapons of mechanized cavalry units can be delivered promptly either from weapons continually mounted on combat vehicles, or from the light and readily maneuverable weapons dismounted from vehicles and placed on the ground while the vehicles are concealed nearby, available to shift to another locality.

In addition to the large number of caliber .30 machine guns, there are caliber .50 machine guns on each fighting vehicle. Then, on each combat vehicle and motorcycle is the caliber .45 submachine gun as a personnel weapon for close defense.

In each cavalry regiment is the platoon of six 4.2" mortars, relatively as mobile as the other combat vehicles. It may be employed to blind hostile observation and antitank weapons, to screen approach of own vehicles, or to reinforce own automatic weapons or artillery fires.

And finally, in the brigade we have the mechanized artillery battalion capable of moving over the same terrain with the same rapidity as the fighting vehicles of mechanized cavalry.

(3) *Armor.*—The advantage of armor is apparent, especially against troops armed principally with small-arms weapons. Against hostile antitank weapons, rapid maneuver in mass over favorable terrain will permit hostile groups to be overrun with sufficient remaining strength to demoralize enemy formations.

(4) *Communication facilities.* The large number of radios down to include platoons, motorcycles and cars, aside from reconnaissance and fighting vehicles, provide ample rapid means of communication. These means facilitate disposition of units over wide fronts or in depth and permit rapid change of dispositions; the communication means enable maximum exploitation of mobility.

(5) *Antiaircraft protection.* Mobility and armor, combined with the presence of one machine gun disposed and manned on each combat vehicle for instant use against low-flying aircraft, enables mechanized cavalry units to operate more freely by day than other troops.

b. Limitations. In connection with the capabilities, *certain limitations* of mechanized cavalry should be clearly and properly appreciated:

(1) *Fuel and ammunition* supply are a constant consideration. Periodic replenishment of fuel is of course a necessity. To insure timely replenishment of vehicle tanks, it is necessary for adequate combat train vehicles, carrying fuel, to accompany combat columns. They, together with certain necessary maintenance elements with the combat columns, require protection especially against an equally mobile enemy.

(2) *Vulnerability.* The relatively large silhouette of most mechanized cavalry combat vehicles makes them comparatively vulnerable when exposed to antitank fire of all calibers, within effective range.

(3) *Personnel.* The relatively small strength in personnel and equipment limits the effectiveness of mechanized cavalry in certain types of combat, notably defensive except delaying action.

(4) *The noise* of the combat vehicles, especially when moving rapidly in large groups, will disclose their presence or approach. This fact must be considered in movements to positions from which surprise attacks are to be launched.

(5) *Terrain, weather* and *darkness* influence very definitely the employment of mechanized cavalry. Certain types of terrain are far more favorable than others in exploiting mobility and surprise. While units can operate over comparatively rough terrain, localities with thick, heavy timber, frequent large boulders, steep slopes, deep or muddy bottomed watercourses or streams with abrupt banks are definitely unsuitable areas for mechanized cavalry.

Again, mud will restrict cross country movement, varying with the relative seriousness of the condition.

And cross country offensive action of mechanized cavalry units at night, except by moonlight, will be exceptional. Night reconnaissance in the presence of the enemy will be chiefly by dismounted patrols. Reconnaissance and combat vehicles may operate at night on roads and engage the enemy by fire, but they risk ambush.

c. Influence on employment. — From the foregoing analysis of the capabilities and limitations of mechanized cavalry, it should be apparent that mechanized cavalry is.

(1) Especially suited for performing missions which permit the maximum exploitation of the inherent mobility, either independently or in cooperation with other mobile forces.

(2) Most effective in the execution of offensive missions where mobility can be utilized.

(3) Capable of operating defensively either for short periods or under conditions which permit offensive action by combat-car elements in conjunction with defensive action by organic fire support elements.

8. SUITABLE MISSIONS FOR MECHANIZED CAVALRY. — *a. Independent missions.* Frequently the most remunerative employment of the mechanized cavalry will be on independent or semi-independent cavalry-type missions Examples of this type of employment are·

(1) Distant or strategic reconnaissance involving probable combat to obtain information
(2) Seizure of distant areas pending arrival of other forces (German armored groups in Poland were pushed boldly far forward.)
(3) Interference missions, such as
(a) Delaying, containing or harassing action against large hostile forces.
(b) Action to neutralize hostile mechanized or motorized forces.
(c) Attack of hostile concentrations, lines of communication and other rear establishments. (German armored and mechanized formations in Poland appear to have operated most successfully on such missions.)
(d) Pursuit and exploitation such as performed by German mechanized divisions in Poland in September, 1939.

In the performance of either independent or semi-independent missions, it must be appreciated that mechanized cavalry is not organized or equipped for prolonged holding or defensive action on one position or locality. Accordingly, in the assignment of such missions, the higher commander should not hesitate to attach additional troops to the mechanized cavalry. Infantry in trucks, motorized artillery, additional engineers, aviation and porteé horse cavalry will all be valuable in certain situations. If the mission is of sufficient importance to justify the use of mechanized cavalry, it is essential that sufficient means be provided.

b. In cooperation with other troops.—When operating with other troops, suitable missions for mechanized cavalry are:

(1) Prior to main battle
Reconnaissance and counterreconnaissance
Covering the advance
Seizing critical areas
Interference with hostile movement, especially by offensive action against hostile flanks and rear
(2) During the main battle.
Participation in the decisive attack
Extending the envelopment
Attacking suitable important objectives such as command posts, reserves, artillery, or the flanks and rear of hostile defenses
Protecting the flanks
Interference with hostile movements.
(3) Following the main battle
(a) If successful.
Exploitation and pursuit either through a gap or by encircling maneuver
Interference with hostile rearward movement
Seizure or attack of suitable rear objectives
Covering the advance of other mobile encircling forces
(b) If unsuccessful
Counterattack.
Covering a withdrawal (either by offensive or defensive action)
Interference with hostile movements

In the execution of many of the foregoing missions the decisive action will be greatly enhanced by the close cooperation of mechanized and horse cavalry. In this manner, the mechanized cavalry can exploit its mobility by operating on the most favorable terrain while the horse cavalry operates in the more broken terrain.

9. EMPLOYMENT. — *a. General.* — (1) The brigade is the largest mechanized cavalry unit. As a basic unit of the brigade, the mechanized cavalry regiment is sufficiently self-contained administratively and tactically to operate independently. Normally, the brigade will reinforce the regiment, depending on the mission, with additional fire support, reconnaissance, and engineer elements. The combat teams should be constituted about the mechanized cavalry regiment as a rule. Except when the minor groups operate within mutual supporting radius, subdivision into combat teams smaller than the regiment will be exceptional save for minor reconnaissance missions and for security detachments such as flank, rear and advance guards.

(2) Mechanized cavalry units are especially concerned with terrain in terms of suitability for maneuver, cover, and concealment, fire positions, and final assault areas.

b. Routes. In order to exploit mobility to the maximum, mechanized cavalry seeks to move by a hard surfaced road or roads where there are ample lateral routes to afford intercommunication between columns. Closely adjacent parallel routes are advantageous. Where practicable, routes with defiles, difficult stream crossings or other obstacles are avoided even though longer routes result.

c. Rates and length of march. — Until enemy activity requires operation cross country, movement is on the best available roads in order to make the best time.

On good roads, without opposition, units no larger than a troop can move at a sustained rate of 35 miles per hour by day, or at night with lights. Units larger than a troop can move at a sustained rate of 25 miles per hour either by day or with lights at night. Without lights, maximum sustained rates at night will not exceed 10 miles per hour on roads or 5 miles per hour cross country. In movement cross country by day, track and half-track vehicles can attain 15 miles per hour on favorable terrain

Reconnaissance elements may cover up to 200 miles per day, other combat and administrative elements not to exceed 150 miles per day as a rule.

Time lengths for main columns or groups of vehicles may, for practicable purposes, be taken as eight minutes per hundred vehicles regardless of the speed. This rule of course is not applicable to security detachments such as advance guards where the various elements are extended in distance.

d. Reconnaissance. - There are three types of reconnaissance elements in the mechanized cavalry brigade:

Observation aviation in the brigade
*Scout-car units, both brigade and regimental
Motorcycle units in the brigade Reconnaissance and Support Squadron.

The three types must be closely coordinated to insure the rapid procurement of necessary information, to conserve each, to insure adequate examination of routes and areas, and to prevent delay of main columns.

Generally speaking, the various reconnaissance agencies will operate as follows:

(1) The observation aviation will perform the more distant reconnaissance, up to a distance equal to two days' march of mechanized cavalry. It will furnish not only information to the main columns but to the ground reconnaissance detachments

*Formerly were armored-car units.

In addition to reconnaissance of routes and areas, the aviation orients at a distance and assists in the control of ground elements by reporting locations and provides a rapid means of communication by drop and pick-up messages as well as by radio.

(2) The brigade ground reconnaissance detachments, either motorcycle or scout car or a combination, are assigned the more distant missions for ground reconnaissance. Zones are assigned together with control or phase lines to designate responsibility for areas and to coordinate the rate of advance. Reconnaissance detachments should normally precede main columns from one to several hours.

(3) Regimental reconnaissance groups perform the closer-in reconnaissance both to the front and flanks. They supplement the brigade reconnaissance when operating as a part of the brigade or perform the relative brigade reconnaissance function when the regiment operates independently. As combat becomes imminent the regimental reconnaissance groups intensify their activity to furnish necessary information of terrain, routes, and enemy dispositions.

(4) Individual motorcycles or groups thereof operate as scouts, liaison agents, or reconnaissance detachments.

(5) Reconnaissance vehicles avoid combat in the execution of missions wherever practicable by detouring enemy groups unless required by the mission to engage in combat.

(6) Night reconnaissance by either scout cars or motorcycles will be restricted to roads. However, patrols may be moved by vehicle to the vicinity of enemy dispositions, either by day or night, then dismount and operate on foot.

(7) A scout-car troop or motorcycle troop is capable of reconnoitering three or four main routes with intersecting crossroads on a front of approximately twenty-five miles at an average rate of advance of not to exceed 15 miles per hour.

(8) Usually at least one platoon in each reconnaissance troop should be held in reserve initially for emergency use.

(9) Engineer and artillery detachments may accompany the reconnaissance detachments to secure early information affecting their respective units.

e. Security. — Observation aviation and ground reconnaissance, both distant and close, contribute greatly to the security of main columns by providing early warning of hostile dispositions which may affect the main body. The immediate security of marching columns is furnished by advance, flank and rear guards.

(1) *Advance guard.* The advance guard for a brigade in one column may consist of not to exceed a squadron of combat cars with an attached machine-gun platoon, an engineer detachment and possibly a section of mortars. A platoon of two 75-mm howitzers may be attached and march with the reserve of the advance guard. For a regiment, one combat-car troop with an attached machine-gun platoon, a detachment of engineers, and a section of mortars will usually suffice. Like an advance guard for the brigade in one column a section of one 75-mm howitzer, or a platoon of two howitzers may be attached to the advance guard for a regiment.

The advance guard for mechanized cavalry columns normally precedes the main body by from five to fifteen minutes. Until contact is imminent the main body usually regulates the rate of march, thereafter conforms to the rate of advance of the advance guard or covering detachment.

Mechanized cavalry advance guards are subdivided into appropriate advance party, support and reserve. Limited flank reconnaissance is usually performed by motorcycle scouts accompanying the advance guard.

(2) *Rear guard.* — Due to the speed of advance, rear guards for mechanized cavalry may be relatively smaller than for other troops. It usually follows the main column more closely than the advance guard precedes. For a brigade, the strength will seldom exceed one combat-car troop; while one combat-car platoon will constitute the rear guard for a regiment. The rear guard is especially important at halts.

(3) *Flank guard.* — Flank guards usually have reconnaissance elements attached to extend reconnaissance to the flanks or to maintain contact with any hostile force. Depending on the nature of the probable threat, machine-gun units, elements of reconnaissance or combat-car troops are suitable for assignment to flank guards. Flank detachments march by bounds from one key locality to another.

(4) *Outguards and outposts.* — (a) At temporary halts, the advance, flank and rear guards establish march outposts covering possible enemy points of observation and avenues of approach, especially roads. It is especially important to hold hostile detachments beyond a distance from which they might bring fire of antitank weapons to bear on main columns.

(b) Mechanized cavalry bivouacs in areas and formations suitable for all-around defense. Hostile avenues of approach are covered by observation groups on a radius of five to ten miles with weapons covering natural obstacles and road blocks closer in. Weapons on vehicles in the bivouac are laid for all-around defense and personnel bivouacs in the immediate vicinity of vehicles. Trains and service elements are parked centrally under protection of other elements.

In many situations, a part of the outpost for the brigade may be furnished entirely by the Reconnaissance and Support Squadron from the machine-gun troop and motorcycle troop thereof. Where these units are inadequate or not available, sectors of the outpost will be allotted the regiments which will normally also utilize machine-gun troop elements for the task.

(5) *Protection against air attack.* All combat vehicles and a proportion of train and service vehicles are equipped with machine guns which can be employed for antiaircraft fire. Some of these weapons are habitually manned and prepared for antiaircraft fire both on the march and in bivouac. At long halts or in bivouac it is routine for air scouts to be posted and some of the weapons of machine-gun units to be placed in suitable dismounted positions, prepared for prompt delivery of antiaircraft fire.

When threatened by air attack on the march or at short halts, units may move off the road, disperse and seek cover. In bivouac, protection is afforded by dispersal in small groups which utilize all available cover supplemented by camouflage.

f. March formations. March formations are designed to facilitate rapid movement and entry into action. The main body of a regiment or smaller unit usually marches on roads in one column; a unit larger than a regiment in two or more columns which include combat teams of self-contained tactical units marching on closely adjacent routes.

Maintenance elements of individual troops and of the regiment, together with a certain number of fuel and ammunition vehicles, habitually march with their units until combat is imminent when they are grouped in a protected area in the *service park* where detachments of the Reconnaissance and Support Squadron may supplement the weapon strength in the combat trains.

Kitchen, baggage, other supply vehicles and service elements may march with their respective units when combat is unlikely; otherwise they march separately or are grouped well to the rear.

A typical formation for a mechanized cavalry brigade marching in two columns is as follows:

(1) Brigade reconnaissance elements preceding from one to several hours.

(2) Regimental reconnaissance detachments engaged principally on route reconnaissance to front and flank of their respective columns.

(3) An advance guard consisting of a combat team of combat-car, machine-gun, mortar and engineer elements preceding each main column by from five to fifteen minutes. Depending upon the situation, the advance guard for a column may vary from a combat-car or machine-gun troop less a platoon to a reinforced squadron.

(4) Brigade and principal unit commanders' group usually march, with the main column, in the interval between the advance guard and the main body with remaining reconnaissance vehicles.

(5) The main body of each column will comprise a combat team of a reinforced regiment, less security detachments, with order of march

(a) Combat-car squadron less detachments.
(b) Machine-gun and mortar elements.
(c) Part, at least, of artillery if more than a battery available
(d) Remainder of combat-car elements
(e) Medical detachments, fuel and ammunition section of combat trains, maintenance platoons at rear of combat team column; or if combat unlikely, all combat trains grouped at rear of respective columns
(f) If combat unlikely, service elements following main brigade column
(g) Rear guard

The formation for a brigade or regiment marching in one column is similar to that indicated for one of the columns described above. Where the brigade marches in one main column, elements of the Reconnaissance and Support Squadron, not engaged on missions, may march near the head of the main column.

In a night march the brigade will normally utilize one route in order to concentrate reconnaissance control and communication thereon.

g. Methods of offensive combat. (1) As mechanized cavalry, covered by its reconnaissance and security detachments, approaches hostile contact, reconnaissance elements withdraw to flanks and remain in observation, trains and service elements are separated from combat elements and concealed well back where they may provide their own defense against both ground and air attack, or additional protection may be provided by elements of the Reconnaissance and Support Squadron.

(2) The combat elements move to the attack, supported by machine guns, artillery and smoke. If the maximum surprise is to be gained by rapid maneuver, every means must be utilized to eliminate delay and to speed up the final assault. The normal employment of mechanized cavalry will approximate that of horse cavalry as modified by the additional speed possible and the influence exercised by certain terrain factors.

(3) Pivots of maneuver and fire support are provided by machine-gun and mortar units of the various combat teams. This may be reinforced by all or part of the Machine-gun Troop of the Reconnaissance and Support Squadron.

(4) Attached artillery, preferably from positions providing direct observation, reinforces the fire support groups and gives attention to hostile antitank weapons. Because of the mobility of the attack, the artillery should be emplaced well forward initially and echelon forward promptly as required. In the brigade, part or all of the artillery may be retained in general support where adequate support of the attack is practicable by this means. When the main attack force cannot be supported adequately by artillery under brigade control, one or more batteries will usually be attached to the maneuvering mechanized cavalry combat team or teams.

(5) Since the advance of mechanized cavalry vehicles is capable of being extremely rapid, coordination is assured by the assignment of successive phase lines or objectives where combat teams quickly reorganize and report.

(6) To prevent undue dispersal of attacking elements, *limits of pursuit* will be prescribed where a definite limiting objective has not been designated.

(7) And in order to provide for prompt assembly of widely dispersed groups and subsequent reorganization, *assembly points* are usually prescribed for the principal combat teams.

Both the *limit of pursuit* and *assembly point* should be well defined, easily recognized terrain features; the latter should provide some cover or defilade.

(8) The attack order will also prescribe the location of the *service park* in which maintenance and combat train elements will assemble. The location should be in an easily defended locality under cover and beyond effective range of the hostile artillery.

h. Defensive combat. The defensive combat of mechanized cavalry, like horse cavalry, is characterized by lack of depth of dispositions and by the fact that the bulk is disposed in such a manner as will facilitate offensive action counterattack. Machine guns constitute the framework of the defensive organization. Machine-gun troops can occupy and defend a front up to 4,000 yards. Some combat-car elements may be placed in the defensive line where, from concealed or defiladed position, they constitute mobile machine-gun nests.

The reconnaissance elements provide frontal and flank observation. Part of them may execute harassing or delaying action in advance of or on the flanks of the main position.

The artillery from positions well forward interdicts hostile routes and generally reinforces the fires of cavalry weapons.

As for horse cavalry, the defensive sacrifices the most important characteristic of mechanized cavalry — mobility. Therefore, most effective defensive action by mechanized cavalry will accrue from its execution of delaying action. In this type of action, the fire support element can operate defensively on the front of hostile columns while the combat-car elements operate offensively against the hostile flanks and rear.

i. Communications. In the highly mobile units such as mechanized cavalry, rapid and efficient communication is extremely important. The brigade and its various component units employ, in order of importance, radio, motorcycle messenger, visual, panel, drop and pick-up messages, pyrotechnics and lights together with a very limited amount of wire in the artillery when conditions permit.

The radio net is capable of including platoon leaders where required by the situation. Both voice and key can be utilized. To expedite transmission and assure secrecy, simple prearranged codes are used. Key transmission, while slower, is more reliable than voice radio and better adapted to the use of code.

Frequently, however, radio must be silenced during certain phases of operations in order to maintain secrecy. In such cir-

cumstances, motor messengers, especially motorcycle, are relied upon. Once the attack is launched, the rapidity of action frequently will allow much greater resort to radio messages in the clear.

j. Control. -The mobility of mechanized cavalry units demands positive means of control and coordination. Depending upon the situation, any or all of the following measures may be utilized:

(1) The designation of control lines beyond which reconnaissance, security elements and elements of main columns (if movement in two or more columns) successively advance only on orders of the main commander.

(2) Periodic reports of location either by time schedule or from designated localities.

(3) Responsibility for maintenance of contact between columns designated.

(4) Liaison officers and motorcycle messengers.

(5) Personal observation by commander.

(6) Special or periodic report by observation aviation.

(7) Prompt reports of change of direction or unexpected delay.

(8) Moving commander's groups in intervals between advance guard and main body of respective columns. Oftentimes, principal subordinate commanders will be assembled and march with the command group in order to expedite transmission of orders.

(9) In some situations, assignment of zones rather than routes for columns in order to allow the maximum freedom of action in avoiding or overcoming obstacles.

k. Orders.—To take maximum advantage of mobility and employ it properly requires rapid decision, transmission, and execution of orders. Consequently, brief, fragmentary, and most often oral, orders are the rule with mechanized cavalry. Distribution of orders will be by the fastest means available. In addition to radio, staff officers and motor messengers are frequently used Orders to one or more major portions of the command will frequently be in the form of mission orders designation of an objective, leaving full freedom of method to the commander concerned.

Final advances or assaults will often be launched on prearranged signals rather than by means of a time of attack designated in advance. In squadrons or smaller combat units, the final order may be given through personal example of the commander, by visual signal, or by leading elements moving in a recognized combat formation.

l. Administrative arrangements. In order to assure timely replenishment of fuel and ammunition of combat vehicles, certain supply vehicles must accompany columns. In addition, there are maintenance vehicles in each troop, a maintenance platoon in each regiment, and the ordnance and quartermaster maintenance companies in the brigade. In brigade operations, the latter two service companies together with kitchen, ration, and baggage trucks and the medical company may be left well to the rear in a protected location.

Second and third echelon maintenance is continued until combat is imminent and resumed as soon as practicable after combat.

During the attack, all maintenance vehicles assemble, with any fuel and ammunition vehicles present, in a designated service park where protection is provided by weapons carried on the trucks and in the maintenance platoon. Within the brigade, each regiment may establish separate service parks, or a combined park may be directed.

It is desirable, but not always possible, that all vehicles enter combat with full fuel tanks. This servicing is usually accomplished prior to the time trains detach from the combat echelon. It can be accomplished in about fifteen minutes.

Wherever practicable, maintenance and reservicing can be facilitated by establishment of mechanized cavalry night bivouacs under the protection of other friendly troops.

10. SUMMARY. *a.* Mechanized cavalry, on favorable terrain, extends the sphere of action of cavalry to much greater distances, and increases the speed of performing missions without, however, altering the fundamental missions of the cavalry arm.

b. The characteristics of mechanized cavalry make it a powerful striking force of great strategical and tactical mobility.

c. The mechanized cavalry regiment and brigade are organized as relatively self-contained tactical and administrative groups capable of either partially or entirely independent operations, or performance of missions in conjunction with other large forces.

d. Since mechanized cavalry units, because of their strategical and tactical potentialities, can exercise such decisive influence in combined operation, higher commanders should insure that the mechanized cavalry is assigned those missions that other available troops cannot satisfactorily perform; the mechanized cavalry should not be absent, or frittered away on unimportant operations, when important decisive missions arise.

e. Because both the vehicles and personnel are highly specialized, mechanized cavalry units are difficult to maintain at strength during active operations. It must be appreciated that frequent periods for maintenance should be afforded.

* * * * * *

The road to glory cannot be followed with much baggage. We can get along without everything but fuel and ammunition.

Paraphrasing a maxim of General "Dick" Ewell

Map Problem

	Paragraphs
SECTION I.—Situation and First Requirement	1-3
II.—Second Special Situation	4-5
III.—A Solution of Second Requirement	6
IV.—Discussion	7-11

SECTION I

Situation and First Requirement

	Paragraph
General situation	1
Special situation	2
First requirement	3

1. GENERAL SITUATION.—*a. Maps*—Special Maps A and B herewith.

b. Boundary.—(Special Map A)—The Susquehanna River is the boundary between two belligerents. Blue (northeast), and Red (southwest)

c. Main forces—Blue main forces completed concentration earlier than Red main forces and invaded Red territory, advancing towards the important industrial and maritime cities of Baltimore and Washington. The advance of the Blue main forces was checked late in May north of Baltimore along the general line: Gwynnbrook (392-702)—Texas (405-705)—Kingsville (426-704).

d. 2d Cavalry Division.—Concurrent with the advance of the Blue main forces, the 2d Cavalry Division advanced rapidly in the Cumberland Valley to the Potomac River where it is covering the crossings over the Potomac River as far east as Point of Rocks (321-681), confronted by elements of the Red 2d Cavalry Division, disposed south of the Potomac River.

e Air activity.—Blue aviation has recently gained superiority and has been able to limit Red observation of Blue rear areas east of the Monocacy River. Blue bombardment aviation has succeeded in interrupting the railway bridges and in damaging highway bridges over the Potomac River at Washington.

2. SPECIAL SITUATION.—*a. First Army plans for resumption of the offensive*—First Army preparation and plans to launch a new offensive, on 2 June, to destroy the Red Army and capture Baltimore, embraced the following pertinent features:

(1) *Mission of the V Corps*—The V Corps, reinforced, which had secretly assembled in the general area: New Market (348-695)—Woodbine (363-693)—Winfield (367-702))—New Windsor (362-714) Libertytown (348-707), is to constitute the maneuvering mass. It will advance, at 3:40 AM, 2 June to the southeast between the Patuxent and Patapsco Rivers along the axis: Mount Airy (358-694)—Dayton (373-678)- Harmans (401-668); mission—to sever rail and highway communications between Washington and Baltimore and operate against the rear of the Baltimore Reds.

(2) *Mission of the 1st Cavalry Division*—The 1st Cavalry Division, which had covered the concentration of the V Corps by screening along the general line: Monrovia (347-693)—Kemptown (350-689)—Morgan (367-692)—Oakland (383-699), on relief from the screening mission during the night 1-2 June, is to assemble and operate, under control of the V Corps in conjunction with the latter's attack, as follows:

(a) The 1st Cavalry Division (less 2d Cavalry Brigade): assemble in the vicinity of hill 885 (356-677) and advance, at daylight 2 June, in a zone immediately southwest and west of the Patuxent River; mission—to facilitate the advance of the V Corps and protect its right (west) flank.

(b) The 2d Cavalry Brigade: assemble in the vicinity of Sykesville (375-692) and initially protect the east flank of the V Corps; but prepared to operate to the southeast in the zone east of the Patapsco River.

(3) *951st Cavalry Brigade (Mechanized), reinforced.**—The 951st Cavalry Brigade came under control of the V Corps at Hanover (372-745) and, during the night 1-2 June, was moved to and concealed in the general area: New Market (348-695)—New London (349-699).

(4) *Combat aviation.*—First Army plans for the employment of all available combat aviation on 2 June provides, initially, for its concentration on counter air force operations.

b. Summary of events prior to 4:15 AM, 2 June.—

(1) *Red.*—(a) Early 1 June a considerable body of troops of all arms was discovered in the area: Herndon (336-644)—Hunter (343-640)—Great Falls (348-648). By dark, 1 June it was estimated that approximately one Red division was assembled in the Great Falls area.

(b) A Red mechanized force, estimated to be a reinforced regiment, was observed in the vicinity of Chevy Chase (365-645) during the afternoon, 1 June.

(2) *Blue.*—(a) The V Corps began its advance as planned at 3:40 AM, 2 June.

(b) The 1st Cavalry Division (less 2d Cavalry Brigade) completed its assembly and initiated its advance shortly after daylight from the vicinity of hill 885 (356-677).

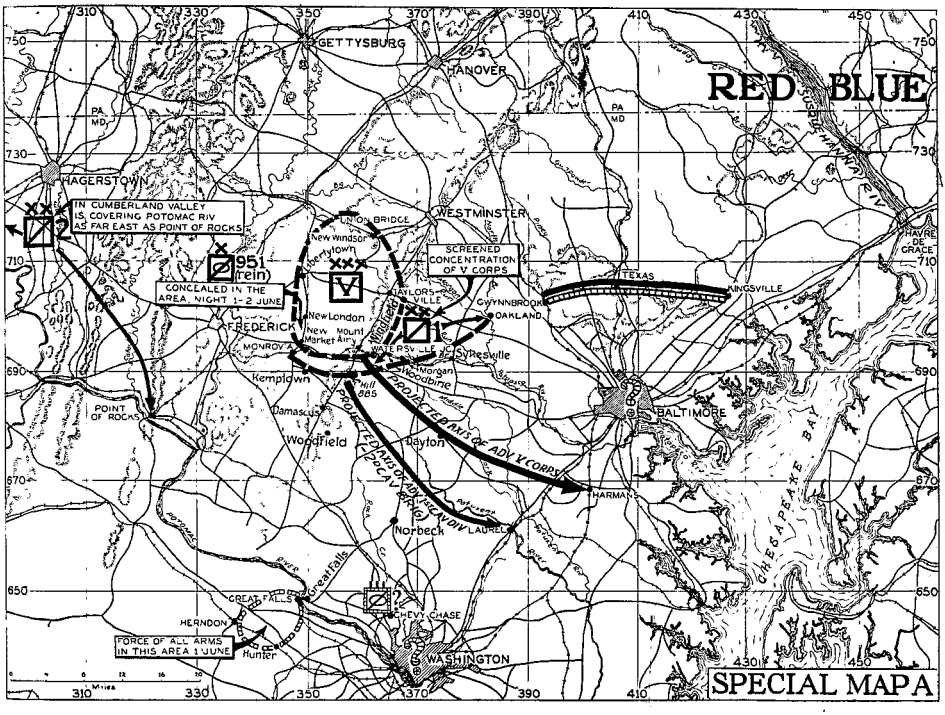
(c) The bulk of the 951st Cavalry Brigade remained concealed in the vicinity of New Market (348-695) with instructions to be prepared to move without delay on receipt of further orders from the V Corps. In accordance with V Corps instructions, the Reconnaissance Troop, 951st Reconnaissance and Support Squadron, together with a detachment of the Motorcycle Troop, moved out at daylight, 2 June to reconnoiter to the southeast as far as the general line Great Falls (349-647)—Chevy Chase (365-645).

(d) By 4:00 AM, 2 June, air reconnaissance of the Great Falls (349-647)—Chevy Chase (365-645) area disclosed:

(i) A Red concentration of all arms north of the Potomac River in the vicinity of Great Falls (349-647).

(ii) A large number of trucks in the western edge of Washington assembling in column on the highway paralleling north bank of the Potomac River, head of column in the direction of Great Falls.

*For details of organization, see pages 73-74 of article herein entitled "Notes on the Organization and Employment of Mechanized Cavalry."



(e) As a result of the reports contained in (*d*) (i), (ii) above, Brigadier General M, commanding the 951st Cavalry Brigade (Mechanized) received telephonic instructions, at 4:15 AM, from the Chief of Staff, V Corps to move at once to the southeast by routes initially west of the general line: Kemptown (350-689) - - Damascus (352-683) — Woodfield (353-677) — Norbeck (365-663); mission — to operate against the Red force north of the Potomac in the Great Falls (349-717) vicinity and prevent its interference with the advance of the V Corps.

c. Advance of the 951st Cavalry Brigade (Mechanized).—The 951st Cavalry Brigade (less brigade reconnaissance detachments dispatched to the south at daylight) initiated its advance to the southeast at 4:30 AM in two main columns. The service elements and all except essential combat train and maintenance vehicles remained concealed in the vicinity of New London (349-699). The 951st Observation Squadron (Resp) began reconnaissance of the brigade zone of advance with two planes. A machine-gun platoon and a detachment of motorcycles, both from the 951st Reconnaissance and Support Squadron, constituted the right (west) flank guard under brigade control. Left (east) flank protection is being provided by the east column. Motorcycle detachments (from Motorcycle Troop, 951st Reconnaissance and Support Squadron) were maintaining liaison with advance elements of the 1st Cavalry Division.

Detachments of regimental reconnaissance troops, operating under their respective regiments, preceded the advance guard of each column.

d. Situation at 5:20 AM, 2 June.—(Special Map B)—(1) *Red.*—Map messages from plane of the 951st Observation Squadron (Separate) indicate Red dispositions at 5:10 AM (portrayed graphically on Special Map B) as follows:

(a) Red mechanized vehicles in the vicinity of Hunting Hill (352-660) and Redland (358-666).

(b) Detachments of Red mechanized vehicles, either personnel carriers or combat cars or both, observed in Gaithersburg (353-666), Washington Grove (355-665), and Emory Grove (356-667) together with antitank weapons.

(c) A battery of artillery is firing from the edge of woods immediately west of Washington Grove (355-665).

(d) What appears to be the bulk of a Red mechanized cavalry regiment is halted in dispersed groups in the vicinity of Derwood (356-662).

(e) Foot troops assembling along the Great Falls—Potomac (351-650) road and transverse roads in that area. A column of trucks about seven miles in length, coming from

SPECIAL MAP B

SITUATION AT 5:20 A.M, 2 JUNE

FOR STUDENTS' SOLUTION OF 1st & 2d REQUIREMENTS

COMMAND AND GENERAL STAFF SCHOOL
Fort Leavenworth, Kansas
1939-1940

To accompany SECTION I,
MAP PROBLEM

MAIN BODY WEST COLUMN IN ORDER

Fwd Ech Regtl Hq 951st Cav
Ren Tr 951st Cav (- 3 Plats)
MG Tr 951st Cav (- 1st Plat)
Mortar Plat 951st Cav
Btry A 951st FA (Bn) (—1 Plat)
1st Plat 951st Engrs (Tr) (— dets)
1st (C Car) Sq 951st Cav (— Tr B)
2d (C Car) Sq 951st Cav
3d (C Car) Sq 951st Cav
Rr Ech Hq Tr 951st Cav
Med Det
Maint Plat, Serv Tr 951st Cav
with elements C Tns
951st Cav

REAR GUARD

One Plat Tr B 951st Cav

MAIN BODY EAST COLUMN IN ORDER

Fwd Ech Regtl Hq 952d Cav
Ren Tr 952d Cav (- 2 Plats)
Ren & Sup Sq (- dets)
MG Tr 952d Cav (—1 Plat)
Mortar Plat 952d Cav
1st (C Car) Sq 952d Cav (- Tr B)
951st FA (Bn) (— Btry A &
1 Plat Btry B)
2d (C Car) Sq 952d Cav
3d (C Car) Sq 952d Cav
951st Engrs (Tr) (—Dets)
Mtcl Tr, Ren & Sup Sq (- Dets)
951st Sig Tr (- Dets)
Rr Ech Hq Tr 952d Cav
Rr Ech Hq Tr, 951st Cav Brig
Med Det
Maint Plat, Serv Tr 952d Cav
with elements C Tns grouped

REAR GUARD

One Plat Tr B 952d Cav

West Flank Guard

East Flank Guard

Heads of Mn at Cols 5:20 A.M.

BRIGADIER GENERAL M
AND COMMAND GROUP

ADV GD W COLUMN
(in action)

Tr B 951st Cav (—1 Plat)
1st Plat MG Tr 951st Cav
Det 1st Plat 951st Engrs (Tr)
Plat Btry A 951st FA (Bn)

ADV GD E COLUMN
(in action

Tr B 952d Cav (—1 Plat)
1st Plat MG Tr 952d Cav
Det 951st Engrs (Tr)
Plat Btry B 951st FA (Bn)

1A 952
A 951 (-two plats)
?
660
660
Brig Rcn Tr
(-dets)
655
655
Ft Trs & Arty
650
650
Truck Column
(5-10 A/M)
645
340
345
350
355
360
365
645

the direction of Washington, is moving west on the River Road with head approaching Potomac (village).

(2) *Blue.*—Brigadier General M, with his S-2, S-3, Air Liaison Officer, principal subordinate commanders, and advance guard commander of the east column, under cover of the ridge 1000 yards east of road junction 399 (353-670) is familiar with the following as regards his own forces:

(a) The advance guards of both columns, on meeting resistance along Great Seneca Creek and Cabin Branch, pushed forward aggressively but are held up (along the line indicated on Special Map B) by heavy fire from hostile antitank weapons and machine guns disposed in the localities indicated, and by artillery fire from the vicinity of Washington Grove (355-665).

(b) The two main brigade columns, comprising units indicated on Special Map B, are halted in march formation with head of west column at Middlebrook (349-670) and that of the east column at road junction 349 (352-673).

(c) The two flank guards have reported from the localities indicated on Special Map B.

(d) The Reconnaissance Troop, Brigade Reconnaissance and Support Squadron, has reported, from vicinity of Falls Road three miles southwest of Rockville (358-658), that its advance has been stopped along the general line: Watts Branch—Glen (351-654)—crossroads 389 (355-653) by strongly defended road blocks and that the bulk of the troop (less 1 platoon) is endeavoring to detour to the east and south.

(e) Troop A, 951st Cavalry has reported from the vicinity of Quince Orchard (347-663) that the banks and bottom of Muddy Branch make crossings difficult.

(f) A platoon of Troop A, 952d Cavalry has reported, from the woods south of Avery (360-661), that the woods and stream (Rock Creek) to the west and southwest of Avery are practicable for passage and maneuver of groups of mechanized vehicles.

(g) The 951st Observation Squadron has located a landing field immediately southeast of New Market where four planes are in readiness.

e. Miscellaneous.—(1) *Weather.*—The weather is clear and warm; forecast, no change.

(2) *Roads, bridges, and culverts.*—All roads are dry. All bridges and culverts located on roads indicated by solid lines on Special Maps A and B permit passage of all mechanized vehicles.

3 FIRST REQUIREMENT.—The decision of Brigadier General M, commanding the 951st Cavalry Brigade (Mechanized), reinforced, at 5:20 AM, 2 June.

SECTION II

Second Special Situation

	Paragraph
Special situation, continued	4
Second requirement	5

4. SPECIAL SITUATION, CONTINUED.—Brigadier General M at 5:20 AM, 2 June decides to attack without delay with the bulk of the brigade, enveloping the hostile east flank in order to destroy the hostile mechanized cavalry force prior to continuing to the south to operate against the Great Falls concentration.

5. SECOND REQUIREMENT.—The orders as actually issued by Brigadier General M to carry out his decision of 5:20 AM, 2 June.

SECTION III

A Soluton of Second Requirement

	Paragraph
A solution of second requirement	6

6. A SOLUTION OF SECOND REQUIREMENT.—After discussing the situation briefly with the assembled Command Group and receiving recommendations from the CO 951st FA (Bn), Brigadier General M, on the ridge 1000 yards east of road junction 399 (353-670), at 5:25 AM, issued oral instructions to the assembled group [present: Aides, S-2, S-3, Air Ln O, COs 951st and 952d Cav, 951st FA (Bn), Recn & Sup Sq, 951st Sig Tr and 951st Engrs (Tr); all of whom were familiar with the existing situation], as follows:

"Make necessary notations on your maps.

"We attack to destroy the opposing mechanized cavalry force, enveloping the hostile east flank.

"(To S-2 and Air Ln O) Provide promptly one plane for brigade command missions; one to 951st FA, and one to 952d Cavalry. Continue observation enemy main columns vicinity Great Falls and report location of any enemy antitank weapons or detachments—direct to brigade Reconnaissance Troop south of Rockville and to 952d Cavalry.

"Major R (CO Recn & Sup Sq), have your Reconnaissance Troop move at once to this area [indicating area 2½ miles SE of Montgomery Country Club (357-650)] block the two roads leading to Washington and delay any movement of Red forces to the southeast. Balance your Machine-gun Troop and Motorcycle Troop attached to and join the reserve.

"Colonel B (951st Cav) have your 2d and 3d Squadrons join and follow the east column to the vicinity of Avery (here) as brigade reserve. Have S, the senior squadron commander report to me en route. Retain Battery A and the engineer platoon; take over both advance guards and have them continue the attack by fire only against the Red detachments in the villages; send a detachment by concealed routes north of Muddy Branch, to attack from the rear the Red battery at the earliest practicable moment and cut off enemy village detachments; smoke the vicinity of Washington Grove to screen movements to the flanks.

"Colonel C (952d Cav), your engaged advance guard elements continue action. With attached units, move rapidly by this route [indicates: Claysville (360-672)—RJ 526 (360-670)—RJ 497 (360-666)—RJ 425 (360-663)] to an assembly area in this vicinity [indicates Avery (360-661) and area to the southwest thereof], and attack and destroy the main Red mechanized force. Inform 951st Cavalry by radio and plane signal when ready to attack.

"Colonel H (CO 951st FA Bn), as you recommend, plan to have the bulk of your artillery in general support, initially, in the vicinity of Avery.

"Captain E [951st Engrs (Tr)], balance of your troop accompany the reserve.

"Limit pursuit to the general line: Great Seneca Creek—highway from Quince Orchard to Rockville.

"Assemble promptly after the attack; 951st Cavalry in vicinity of RJ 506 (indicates 1 mile south of Washington Grove); 952d Cavalry in the vicinity of Derwood.

"Following the attack, be prepared for prompt movement against enemy forces in vicinity of Great Falls.

"S-3, send Aide 2 to group the combat train elements of both columns, and conduct them by routes east of main columns and establish combined service park in this vicinity [indicates Mt Zion at (362-670)]. Use the present east flank guard to provide additional protection.

"Colonel B (951st Cav) report location your command post

"I will accompany Colonel C (952d Cav) to the vicinity of Avery.

"Any questions? Move out!"

SECTION IV

Discussion

	Paragraph
Purpose	7
Mission of the 951st Cavalry Brigade (Mechanized)	8
Movement of the 951st Cavalry Brigade (Mechanized)	9
Decision of Brigadier General M at 5:20 AM, 2 June	10
The plan of attack	11

7. PURPOSE.—The purpose of this problem is to present a situation in which a reinforced mechanized cavalry brigade, made available to a higher commander, is used to further the decisive action of the larger force by assignment of a separate mission. Further, the problem portrays the action of the mechanized cavalry brigade when, in the execution of the assigned mission, an inferior hostile mechanized cavalry force interposes.

8. MISSION OF 951ST CAVALRY BRIGADE (MECHANIZED), REINFORCED.—*a. Attachment to V Corps.*—(1) A mechanized cavalry brigade is not an organic part of a reinforced corps. It is organized as GHQ or army troops and may be attached to subordinate units such as corps or divisions for special missions. To justify such attachment, the subordinate unit should have appropriate missions—in suitable terrain, directly connected with the decisive effort of the whole force, and warranting employment of the mechanized cavalry unit.

(2) Because the V Corps is making the decisive effort in the renewed offensive, army has made available to the corps commander an additional powerful means to aid in the rapid accomplishment of the assigned mission.

(3) In order to reap the maximum benefits from the surprise employment of this highly mobile force, the V Corps moved the 951st Cavalry Brigade forward to the New Market area and held it concealed behind other friendly troops. From this location the brigade could be launched with the minimum delay on any opportune, suitable mission which developed to the southwest, south or southeast. Too, from the New Market area, the 951st Cavalry Brigade would be able to move rapidly to counter any hostile mechanized cavalry action from the direction of Chevy Chase.

b. Possible missions for the 951st Cavalry Brigade (Mechanized).—Prior to the receipt at daylight, 2 June, of the information regarding the movement of the Red concentration across the Potomac at Great Falls the V Corps Commander probably considered several possible missions for the mechanized cavalry brigade. Among these may have been:

(1) To attach it to the 1st Cavalry Division with the mission, for the composite cavalry force, to protect the flanks of the V Corps.

(2) To send the brigade in advance either to seize the area of the ultimate corps objective or to interrupt the highways and railways in that area. This mission was likely rejected as impracticable due to the number of difficult streams in the area and the fact that the brigade could not be supported by other troops for a considerable period.

(3) To dispatch it to the southeast with the mission to prevent movement of Red forces, especially the hostile mechanized cavalry, that might interfere with the advance of the V Corps. Such premature disclosure of the presence of the 951st Cavalry Brigade would have sacrificed surprise.

(4) To hold the brigade in corps reserve pending developments which would permit utilization of the mobile force at an opportune moment to further the decisive action of the corps.

c. Mission assigned at 4:30 AM, 2 June.—(1) On receipt of the information shortly after daylight, 2 June, that a definite threat was developing from the direction of Great Falls, which, if not countered, could seriously interfere with or possibly neutralize the V Corps operation, uncertainty as to a proper mission for the mechanized cavalry was removed. Here was a highly important mission which no other available troops could perform adequately and promptly; a mission of vital importance to the advance of the V Corps. It was a typical cavalry mission; one for which its mobility and armament especially fit the mechanized cavalry brigade.

(2) On the information available shortly after daylight, the corps commander cannot know in what direction the Reds along the Potomac will move. From Great Falls they may move either to the north, northeast or east. For this reason the mission assigned to the 951st Cavalry Brigade is general in nature; i.e., to move at once to the southeast by routes initially west of the general line: Kemptown—Damascus—Woodfield—Norbeck, to operate against the Great Falls Reds and prevent their interference with the advance of the V Corps.

(3) By specifying that the mechanized cavalry brigade move to the southeast by routes generally west of the line: Kemptown—Damascus—Woodfield—Norbeck, the corps commander assured that there would be no interference with the 1st Cavalry Division. Conversely, initial freedom of movement for the 951st Cavalry Brigade was similarly assured.

9. MOVEMENT OF THE 951ST CAVALRY BRIGADE (MECHANIZED).—*a. March procedure.*—(1) Whenever practicable, it is preferable that ground reconnaissance elements precede mechanized cavalry march columns by from one to several hours; and that air reconnaissance of the zone of march be initiated in advance. In this situation the V Corps had directed that ground reconnaissance in the direction of

Great Falls be initiated at daylight by the 951st Cavalry Brigade. In compliance, the Brigade Reconnaissance Troop (from the 951st Reconnaissance and Support Squadron) had been moving to the southeast since 3:40 AM (daylight).

Elements of the Reconnaissance and Support Squadron normally execute the more distant ground reconnaissance of the brigade zone of advance while the regimental reconnaissance troops (Troop A in each mechanized cavalry regiment), operating under regimental control, reconnoiter for their respective regiments and major subdivisions thereof. The regimental reconnaissance troops may also assist by providing local flank protection and liaison; the latter especially if the regiment advances in more than one column.

(2) In addition to the assistance rendered by obtaining early information of the brigade zone of advance, the supporting aviation is invaluable to mechanized cavalry for assuring rapid control and coordination of ground reconnaissance groups and march columns, as well as for subsequent battle reconnaissance.

(3) The road net permitting, as it does in this situation, the mechanized cavalry brigade may march in two columns, each composed of a complete combat team capable of rapid development and independent action or mutual support.

(4) The brigade commander normally will march at the head, or in the interval between the head and the advance guard, of one of the main columns. He is usually accompanied by members of the brigade staff and the principal subordinate combat unit commanders or their representatives. Under such an arrangement, the brigade commander can issue orders directly to appropriate elements, thereby assuring rapid execution of decisions and capitalizing on the mobility of his command. Thus we find, in the situation at 5:20 AM, 2 June, in a location well forward, Brigadier General M is enabled to make a prompt decision and issue the necessary instructions for a prompt attack—from a knowledge of the situation furnished by the advance guards, aviation, brigade and regimental reconnaissance detachments.

10. DECISION OF BRIGADIER GENERAL M AT 5:20 AM, 2 JUNE.—*a. The mission of the 951st Cavalry Brigade (Mechanized), reiterated.*—The mission of the 951st Cavalry Brigade is to move at once to the southeast to operate against the Great Falls Reds and prevent their interference with the advance of the V Corps.

b. Enemy situation.—(1) A considerable part, at least, of the estimated Red division is north of the Potomac River. A long truck column is approaching the Red force. The trucks may be carrying reinforcements or may be for the purpose of transporting the Great Falls forces. In the latter case, movement may be to the north, northeast or to the southeast via Washington. Because of this last possibility it is extremely important to block promptly movement of the Great Falls--Potomac forces to the east or southeast. If the Red forces move in any other direction, the problem of Brigadier General M is not so difficult.

(2) But, interposed between the main objective and the 951st Cavalry Brigade is a Red mechanized cavalry force estimated to be a regiment—probably the same force previously reported at Chevy Chase, which has been ordered forward to protect the Great Falls forces by countering our threat. Detachments of this force are occupying extremely strong localities- protection afforded by the villages of Gaithersburg, Washington Grove, and Emory Grove. Under the security afforded by these detachments, a battery is firing from the vicinity of the woods west of Washington Grove. Flank protection is evidently being provided by the Red mechanized detachments reported near Hunting Hill and Redlands. The bulk of the Red mechanized cavalry regiment is apparently around Derwood in readiness to support its forward detachments, to move promptly either to the west or east to counter Blue movement, or to fall back to the village of Rockville.

c. Terrain.—(1) From available information, Muddy Branch restricts movement of Blue units against the hostile west flank to a relatively close-in envelopment of Red forward detachments.

(2) Reports from reconnaissance detachments indicate the practicability of terrain west and southwest of Avery for the maneuver of mechanized vehicles.

d. Possible plans.— As the picture of the hostile situation took form, Brigadier General M undoubtedly considered a number of plans. Among these likely were:

(1) To contain the Red mechanized cavalry regiment with part of the 951st Cavalry Brigade while the remainder moved promptly to operate against the main Red columns southwest and southeast of Rockville.

This plan had the advantage of prompt action against the main Red forces. It had, however, certain extremely dangerous disadvantages; to contain the Red mechanized force would be difficult, if not impossible; it would play into the hands of an aggressive hostile mechanized cavalry commander by reducing the Blue mechanized detachments to an equality, or even inferiority, in strength with Red since further division of Blue force would be necessary to initiate delay of Red main columns. Also, it risked the serious danger of the Red mechanized cavalry force evading the containing force and striking the remainder of the 951st Cavalry Brigade in rear or flank.

(2) To avoid the Red mechanized cavalry regiment and move directly to intercept the main hostile Great Falls forces.

Such action risked the same dangerous eventualities as envisaged in the preceding paragraph. It would surrender the initiative to the inferior Red mechanized force, leaving it free to choose the most opportune times and places for attack of the rear and flanks of the 951st Cavalry Brigade, particularly when the latter would be most vulnerable.

(3) To attack at once to destroy the hostile mechanized cavalry, in order to permit prompt operations against the Red forces in the vicinity of Great Falls.

Every moment of inaction by Brigadier General M operated to the advantage of Red and complicated the execution of the assigned mission of the mechanized brigade. Sooner or later, the hostile mechanized cavalry will probably have to be engaged. By immediate rapid destruction of this Red force, the 951st Cavalry Brigade would be free to concentrate its efforts against the Great Falls hostile force. This plan adopted; the *what*, *when* and *why* of the decision having been determined, it remained only to decide the *how* and the *where*.

(a) For reasons previously noted [paragraph 10 *c* (1)], a wide envelopment of the west flank appeared impractical. However, the terrain did permit a close-in envelopment of Red forward detachments by routes generally north of Muddy Branch.

(b) Additional reasons for making the main attack against the east flank of the Red mechanized cavalry regiment are:

(i) The disposition of the brigade with the bulk in the east column.

(ii) The 951st Cavalry Brigade will interpose between the flank of the V Corps and both the Red mechanized cavalry and the Great Falls forces.

(iii) Furthermore, the brigade will be in a better location to intercept any attempted movement of the Great Falls Reds to the east or southeast.

(c) From an examination of the terrain and routes, a movement of the bulk of the brigade to the east flank could be executed by concealed routes, generally beyond the range of the hostile battery, to a suitable assembly position from which to attack the main body of the hostile mechanized cavalry. Such a movement could, it appeared, best be made with speed by roads rather than cross-country. A choice of two routes was presented; the one via Claysville—Olney—Norbeck—Rockville which would take the enveloping force wide from the holding attack; or a closer in route via Claysville—road junction 426—Avery where the enveloping attack could always turn in promptly against any advance by the hostile main mechanized cavalry force.

(d) It was important to keep the advance Red elements engaged in the villages. The advance guards must, therefore, continue their action. A frontal advance against anti-tank gun fire from the well protected localities provided by the villages would result in unnecessary losses. But a fire attack by the advance guards, reinforced by artillery, in conjunction with an envelopment of the west flank and rear, by routes immediately north of Muddy Branch promised success, not only by containing the village detachments but even destroying or capturing the Red battery and separation of the advance elements from the bulk of the hostile regiment. This secondary attack, closely coordinated with the envelopment of the east flank, appeared to promise the most decisive results.

11 THE PLAN OF ATTACK —*a. Nature of orders.*—In most mechanized cavalry actions, orders will be oral, fragmentary, and issued by the commander in person either directly by radio, by staff officers, or by messengers. As in this situation, the brigade commander may cause principal subordinate commanders to join him or send staff representatives to join the brigade command group. To accelerate action further, principal subordinate commanders may at the same time arrange to have their squadron or similar unit commanders move to or march at the head of the principal combat team columns in order to receive orders promptly.

b. Main attack.—The bulk of one mechanized cavalry regiment was designated to make the main attack. And the east column was selected for reasons outlined before [paragraph 10 *c* (1), 10 *d* (3) (b) and (c)]. Coordination of the main attack with the principal effort of the holding attack was properly assured by requiring a signal to the holding attack forces when the east flank attack was ready to be launched. The distance which the main attack force had to move in reaching its assembly position, and the possibility of changes developing in the situation during the movement to position, warranted the mission type orders to the main maneuvering force.

c. Holding attack.—The holding attack force included the advance guards of both columns. In addition, to provide added striking power and necessary command and communication facilities the 951st Cavalry, less two combat-car squadrons, was assigned to the holding attack. While a mission type order to the 951st Cavalry might have sufficed, Brigadier General M had sufficiently definite information as to enemy dispositions and the terrain restrictions to warrant the detailed orders given. He desired not only to fix but to destroy the Gaithersburg Reds. Since it appeared that the mortar platoon of the 951st Cavalry could assist in maintaining desired secrecy of the movement of the main attack force, the brigade commander prescribed that terrestrial observation in the vicinity of Washington Grove be blanketed with smoke.

d. Artillery support.—Two platoons of artillery (two 75-mm howitzers each), one with each advance guard, were already in action at 5:20 AM. The remainder of Battery A with the west column was allotted for direct support of the holding attack. The remainder of the 951st Field Artillery Battalion might have been placed in general support in the area north of the advance guards. However, Brigadier General M prescribed that the artillery battalion move to the east flank. Why? Probably for the following reasons:

(1) From the area southwest of Avery the artillery will be able to fire on any withdrawing Red mechanized cavalry elements.

(2) The bulk of the artillery will be available promptly for interdiction of routes to the south and southeast of Rockville should any threat develop from that direction.

(3) The artillery will be available more promptly for any future movement of detachments or other action to the south against the Great Falls forces.

e. Engineers.—A platoon of engineers was left with each of the cavalry regiments to render required assistance, while the remainder of the 951st Engineer Troop was assigned to accompany the reserve.

f. Aviation.—One airplane was made available to the 952d Cavalry to aid in reconnaissance of routes to the assembly area for the attack and for continued assistance during the attack. Another airplane was made available at once for artillery missions. And one airplane was directed for brigade command missions to keep the brigade commander informed not only of the location of units but to direct the action and speed up control. At the same time, S-2 was instructed to continue the reconnaissance missions. The brigade commander indicated the essential elements of information in the same instructions.

g. Reserve.—In order to be able further to influence the action promptly, the two rear combat-car squadrons of the 951st Cavalry (west column) together with the remainder of the machine-gun troop of the Reconnaissance and Support Squadron were designated as brigade reserve. It was directed to follow the main maneuvering force to the vicinity of

Avery from which location it will be able to reinforce the main attack, meet any unforeseen development, or to move rapidly to the south against the Great Falls Reds.

h. Brigade and regimental reconnaissance troops.—(1) The brigade reconnaissance troop was so located southwest of Rockville as to be able to move most readily to intercept and block any movement of Red columns to the east or southeast from the Great Falls—Potomac area. It should be able to accomplish this mission until other brigade elements can be concentrated against these Reds.

(2) One platoon of the 952d Cavalry Reconnaissance Troop, operating under regimental control, has constituted the right flank protection. Brigadier General M earmarks this platoon to join the service parks.

(3) The remainder of the regimental reconnaissance troops are left available to the respective regiments where, with combat imminent, their need is especially urgent for flank and advance security missions, battle reconnaissance and liaison.

i. Limits of pursuit and assembly points.—In order to prevent undue dispersion and loss of control, it is usual, with mechanized cavalry, to prescribe a limit of pursuit in attack situations. The *limit of pursuit*, and for the same reason the *assembly point*, should be well-defined, easily seen and recognizable terrain features

j. Prompt assembly—Because time was vital, all were warned to assemble promptly, prepared for subsequent action against the Great Falls forces.

k. Service park.—At the rear of mechanized cavalry columns march the maintenance platoons and a limited number of fuel and ammunition vehicles As combat is joined these groups of vehicles are assembled, together with troop repair trucks, in a protected locality—usually beyond the range of hostile artillery, designated as *Service Parks.* Each regiment in the brigade may establish a separate service park; or a combined park may be established. In this situation, Brigadier General M prescribed the latter procedure and designated the indicated elements to accompany and provide protection for the trains, supplementing the machine guns which are on a certain number of the train vehicles.

l. Service troops.—The Ordnance Maintenance Company, the Quartermaster Maintenance Company, and the Medical Company comprise the service echelon of the mechanized cavalry brigade. Normally, when the brigade marches to combat, the service companies will be left well to the rear, as in this situation—concealed in the New Market area. When their services are required, elements of these companies will come forward; especially the medical company which will likely send forward detachments to the Service Park at Mt. Zion to begin assembly and evacuation of personnel casualties.

m. Location of commander.—(1) It is usual with mechanized cavalry to direct the principal subordinate unit and combat team commanders to report the location of their respective command posts.

(2) The brigade commander often will accompany the principal attack force to a location where direct observation over the largest expanse of the terrain of combat is available. In this situation, from a location on the east flank, in close proximity not only to the maneuvering force but to both the reserve squadrons and the bulk of the artillery, Brigadier General M will be in a position to influence and control most rapidly the action of the bulk of the brigade.

Strategical and Tactical Mobility

*(As illustrated by operations of the 7th Cavalry Brigade, Mechanized, in the First Army Maneuvers, August 1939)**

By Major R. S. Ramey, *Cavalry*

During the month of August 1939, one of the largest peacetime concentrations of the three components of the United States Army took place at Plattsburg, New York where the following major units assembled:

26th Division 27th Division 43d Division 44th Division	Organized as a two corps army (Black) for the Army Phase of the Maneuver
1st Division 18th Infantry Brigade †7th Cavalry Brigade, Mechanized	Organized as a provisional corps (Blue) for the Army Phase of Maneuver
101st Cavalry 101st Signal Battalion 197th and 212th Coast Artillery (AA) 66th Infantry (Bn) (tanks) Certain miscellaneous organizations comprising Ordnance, Quartermaster Observation Aviation and Signal Units	Black Army troops

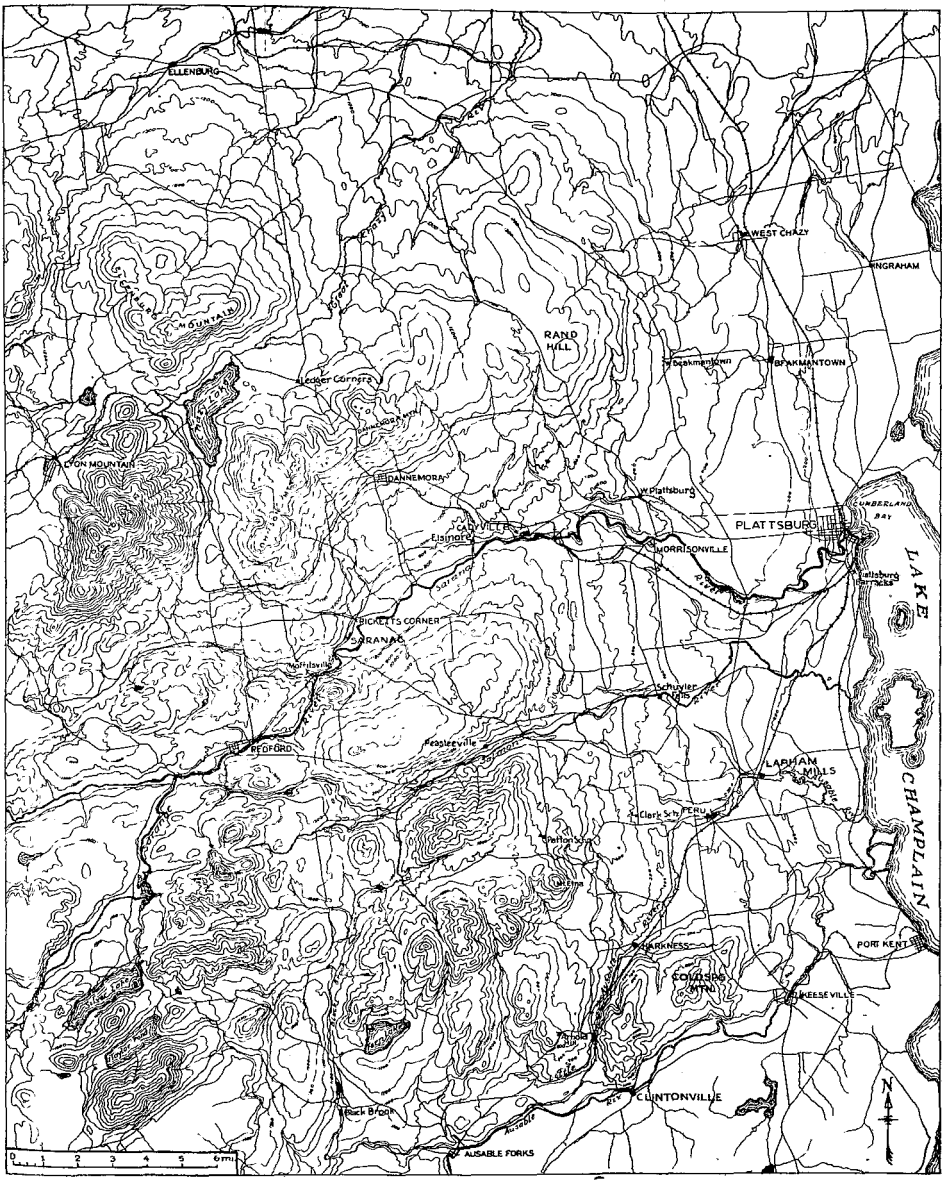
Many of the readers participated in these Plattsburg exercises but perforce had only limited knowledge of operations other than those pertaining to their own immediate organization or assignment. To supplement the partial picture of the combined operations possessed by many of the participants and to provide a general appreciation of the strategical and tactical possibilities of mechanized cavalry, a resume of the operations of the 7th Cavalry Brigade, Mechanized, in the Army Phase of the Plattsburg Maneuvers, is presented in the succeeding pages.

Terrain of Maneuver Area

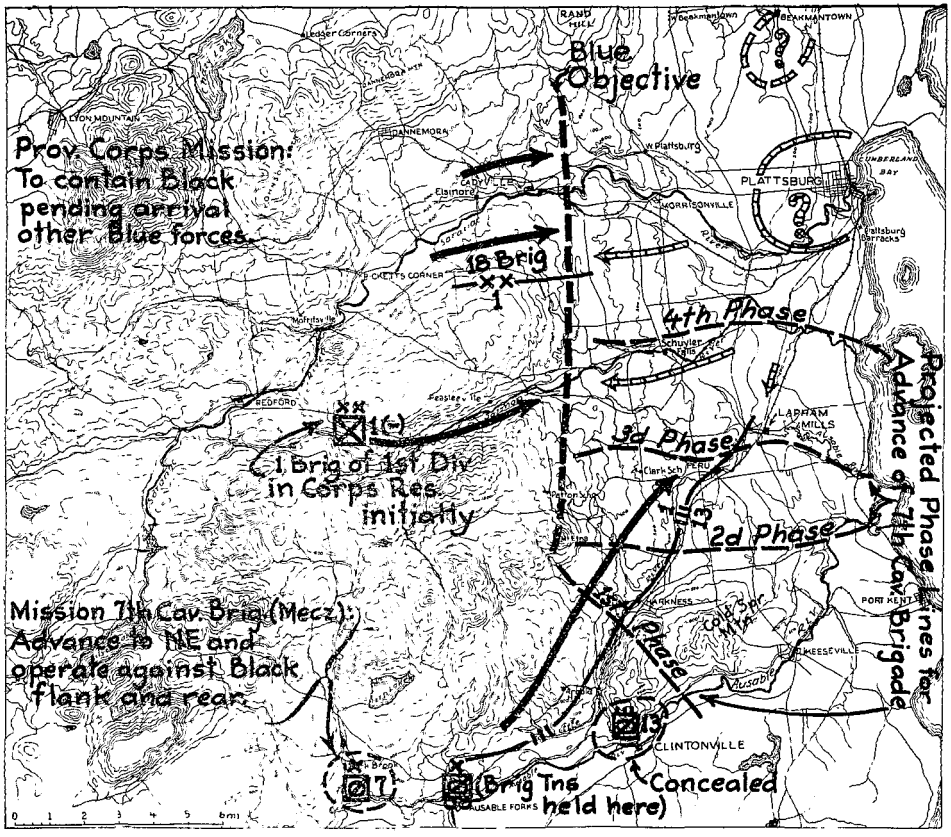
The Plattsburg Maneuver Area (see accompanying map) consisted of a tract approximately 20 miles wide by 30 miles long to the west of Lake Champlain. It was divided into two contrasting areas: the eastern section along Lake Champlain,

*Excerpts from an observer's report (Major R S Ramey, Cavalry) on the operations of the 7th Cavalry Brigade, Mechanized, in the First Army Maneuvers.

†Comprised:
Brigade Headquarters and Headquarters Troop
1st Cavalry
13th Cavalry
68th Field Artillery (Bn)
12th Observation Squadron
Company E, 5th Quartermaster Regiment, Maintenance
19th Ordnance Company, Maintenance
Detachment Medical Corps
Company E, 1st Engineers (attached for Maneuvers only).



PLATTSBURG MANEUVER AREA — AUGUST 1939



SKETCH NO 1
SCHEME OF MANEUVER, 7TH CAVALRY BRIGADE
P. M., 23 AUGUST

gently rolling, gradually sloping upward to the Adirondack Mountains to the west, comprised about one-third of the area, the remaining two-thirds of the area was extremely broken, rock strewn and heavily wooded

Although the road net was excellent in the eastern part of the area the mountains and forests of the south and west section were anything but favorable for mechanized operations.

The hill masses of the maneuver area were cut by three more or less parallel river valleys which coursed generally from southwest to the east into Lake Champlain; in order from south to north these were the Ausable, the Salmon, and the Saranac Rivers.

MANEUVER RULES

For the exercises at Plattsburg certain ground rules applied. Only existing arms and equipment were permitted.

No chemicals, gas masks or impregnated clothing were used

Defensive positions, road blocks and demolitions were outlined only. Effectiveness was judged by umpires according to preparation made, availability of personnel, matériel and equipment.

Actual combat was restricted to areas covered by trespass agreement but troops could move on roads anywhere within their march capability.

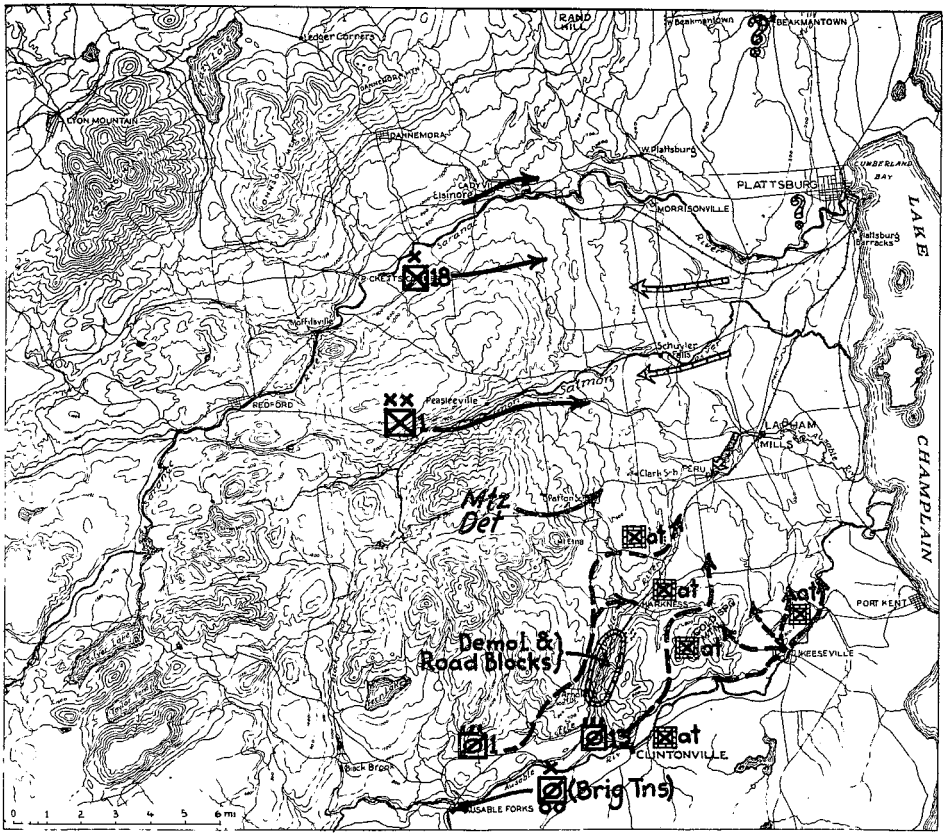
Artillery fires were intended to be represented by smoke pots and candles.

No combat aviation was available to either side.

SITUATION

(See Sketch No. 1.)

Briefly the *general situation* for the Army Phase was:



SKETCH NO. 2
OPERATIONS 7TH CAVALRY BRIGADE
P. M., 23 AUGUST

A Black Army, detached from main forces operating elsewhere in New England, was assembled in the Plattsburg vicinity preparatory to an advance to the southwest. (Black units indicated on accompanying sketches by hachured symbols.)

To oppose this force, the Blue Provisional Corps was hastily constituted and moved towards Plattsburg with the mission to contain Black until additional Blue forces could be assembled to destroy the invader. During the night of 22-23 August the Provisional Corps (less 7th Cavalry Brigade, mechanized) moved into concealed bivouacs in the western part of the maneuver area. The 7th Cavalry Brigade (Mechanized) was scheduled to arrive at BLACK BROOK at noon, 23 August and pass to control of the Provisional Corps; the brigade commander and staff was assumed as preceding the brigade and receiving instructions for the employment of his brigade.

BLUE PLAN OF OPERATION

The Provisional Corps advanced shortly after noon, 23 August, to seize the slopes along the general line indicated on Sketch No. 1 in order to contain Black. *Concurrently, the 7th Cavalry Brigade, Mechanized, was directed to move from BLACK BROOK to the northeast to operate against the hostile south flank and rear.* The general plan of advance employed by the mechanized cavalry brigade is indicated on Sketch No. 1.

OPERATIONS, 23 AUGUST DAYLIGHT 24 AUGUST

It had been anticipated that Black would make a strong thrust north of the SARANAC. Since a river crossing in the vicinity of ELSINORE was required as a training exercise it became necessary to stop, arbitrarily the rapid advance of elements of the 18th

Infantry Brigade north of the SARANAC. Immediately south of the SARANAC, however, the Black 101st Cavalry moved rapidly to the west, gained contact with the 18th Infantry Brigade and very effectively delayed its advance throughout the afternoon.

On its front the 1st Division made very effective use of motorized detachments by way of the SALMON RIVER valley to the PATTON SCHOOL vicinity, southeast of which point junction with the 7th Cavalry Brigade was established about 2:30 PM.

(See Sketch No. 2.) In its front, the 7th Cavalry Brigade reconnaissance elements quickly made contact with Black motorized detachments in the vicinity of CLINTONVILLE, north thereof and near HARKNESS; and developed the fact that the CLINTONVILLE – HARKNESS defile was effectively blocked by demolitions. Parallel trails to the east and west of this defile, over COLD SPRING MTN and ARNOLD HILL, were not blocked and permitted the mechanized cavalry to debouch into the more favorable terrain to the northeast of HARKNESS.

While reconnaissance elements had cleared the CLINTONVILLE – KEESEVILLE defile of hostile motorized and antitank detachments and were operating well to the north towards LAPHAM MILLS, the Mechanized Brigade Commander determined late in the afternoon to concentrate his effort to the northeast towards PERU and eventually against the hostile main south flank and rear. The afternoon had seen a succession of isolated actions against enemy delaying detachments operating in the almost continuous defiles of this section.

(See Sketch No. 3.) Shortly before dark the 23d, the 13th Cavalry was moving to the northeast of COLD SPRING MTN and covering the brigade right flank by detachments in and north of KEESEVILLE. The 1st Cavalry, by a double envelopment was successfully occupying PERU at dusk. At this time (about 8:00 PM) the CG 7th Cavalry Brigade, by means of staff officers, directed that the combat elements withdraw at once, moving without lights, to concealed bivouacs in the general area: CLINTONVILLE — ARNOLD HILL for reservicing, rest and feeding in preparation for the following day's operations. The bivouac area was outposted and liaison with 1st Division maintained.

Instructions had already been given by messengers for kitchen and fuel trucks to proceed to bivouac areas when orders were received (as troops were arriving in bivouac areas) directing the brigade to move to the west thence to the north flank (north of the SARANAC RIVER) prepared for new operations at daylight 24 August. The change of mission for the 7th Cavalry Brigade apparently resulted from the discovery shortly after dark, of a serious threat to the Blue north flank by Black troops beginning to move from the vicinity of BEAKMANTOWN. This new mission called for assembly of the brigade over difficult mountain trails, a night march of nearly 50 miles, all without lights, after some 9 hours of strenuous operations, and again resume operations at daylight on the opposite flank.

Previous orders were countermanded and new orders carried by staff officers. Assembly of march serials was completed and the march initiated at 11:15 PM (preceded by reconnaissance) with an amazing lack of confusion and minimum of delay — though the bulk of the brigade had to be moved over rough mountain trails without lights. For route of night march, see Sketch No. 3.

About 2:00 AM the brigade was halted in march column between REDFORD and SILVER LAKE; kitchen and fuel trucks joined organizations to provide a hot meal and refuel. The march was resumed about 2:45 AM over a narrow road along the SARANAC, rendered hazardous by frequent temporary bridges and fills on a road which flanked the river.

At SARANAC, regimental and similar commanders joined the brigade commander who issued instructions calling for the following:

The brigade to march via PICKETTS CORNER to DANNEMORA. From there the brigade, less 1st Cavalry reinforced by a battery of artillery and platoon of engineers, to march on RAND HILL; the 1st Cavalry to turn north at DANNEMORA, move via LEDGER CORNER on the line: WEST BEAKMANTOWN — BEAKMANTOWN where it would report arrival and receive orders (a further wide swing of about 30 miles).

On resumption of the march there occurred one of those contretemps which can so easily occur at night with all troops, and especially with fast moving columns. Instead of proceeding to DANNEMORA as required, the 13th Cavalry took the wrong turn at PICKETTS CORNER and was heading northwest for some time before the error was discovered. As a consequence the planned maneuver was delayed for better than one hour. The forward echelon of the brigade arrived in DANNEMORA at 5:15 AM but it was 6.00 AM before leading elements of the 13th Cavalry arrived — and then badly mixed as result of reversal of direction on the road. In the meantime the 1st Cavalry was en route north of DANNEMORA.

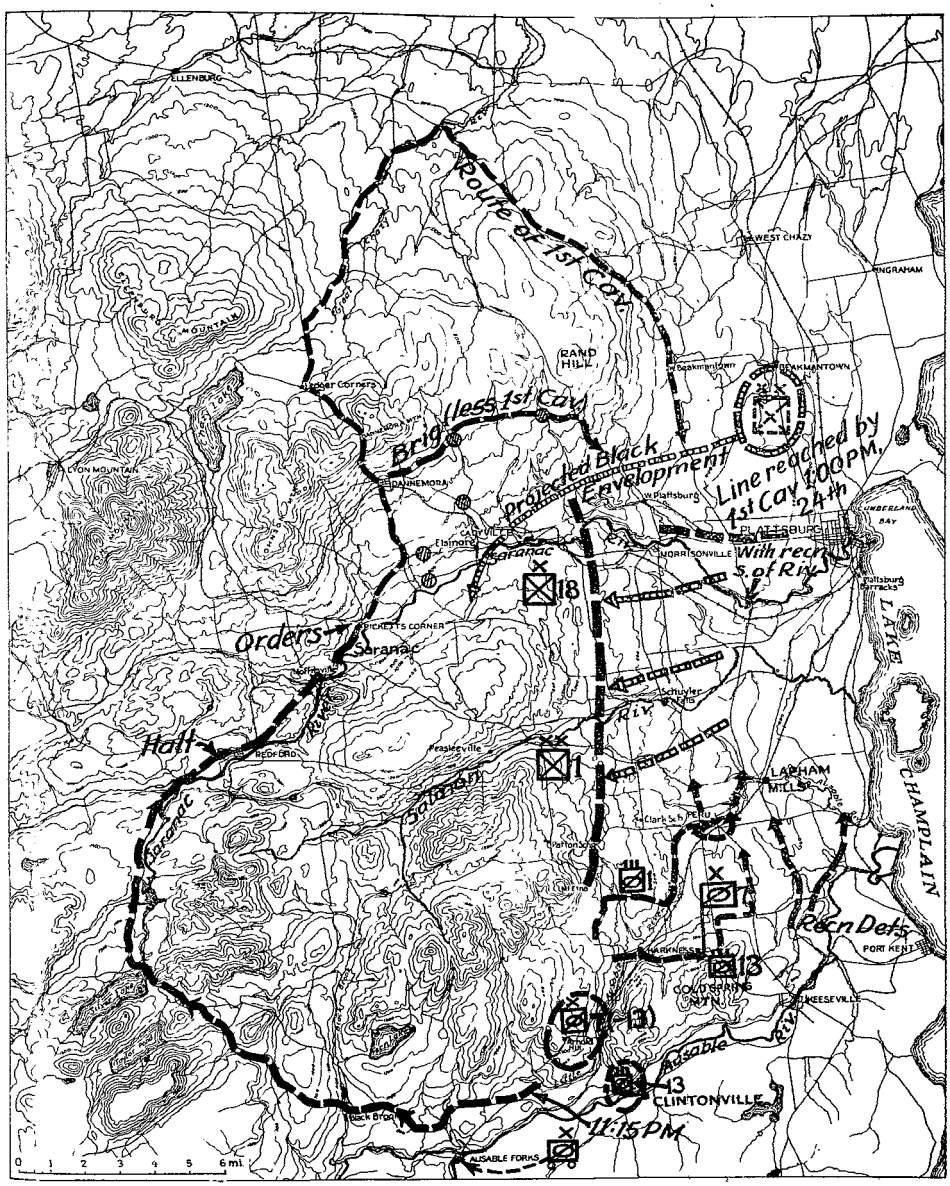
OPERATIONS DURING DAYLIGHT 24 AUGUST

The unfortunate delay had two immediate consequences. Information was received about 6:30 AM that Black troops were crossing the SARANAC on two bridges to the west of ELSINORE and CADYVILLE respectively and that there was a large truck movement in the same vicinity. (This was the 43d Division, the Black Army reserve, which had been moved by motors during the night from BEAKMANTOWN and was undertaking an envelopment directed against the north flank and rear of the Blue position.) The 13th Cavalry moved east from DANNEMORA, in the direction of the hostile river crossing. About 2 miles east of DANNEMORA progress was effectively halted by hostile demolitions and antitank dispositions hastily provided after daylight. Earlier an armored-car platoon had been in possession of this bottleneck but through some mixup was withdrawn. As a consequence the advance of the 13th Cavalry for the next two hours was a succession of limited objective flanking actions against antitank dispositions in a continuous defile. Combined trains and service parks were halted at DANNEMORA whence they operated until late in the afternoon of the 24th.

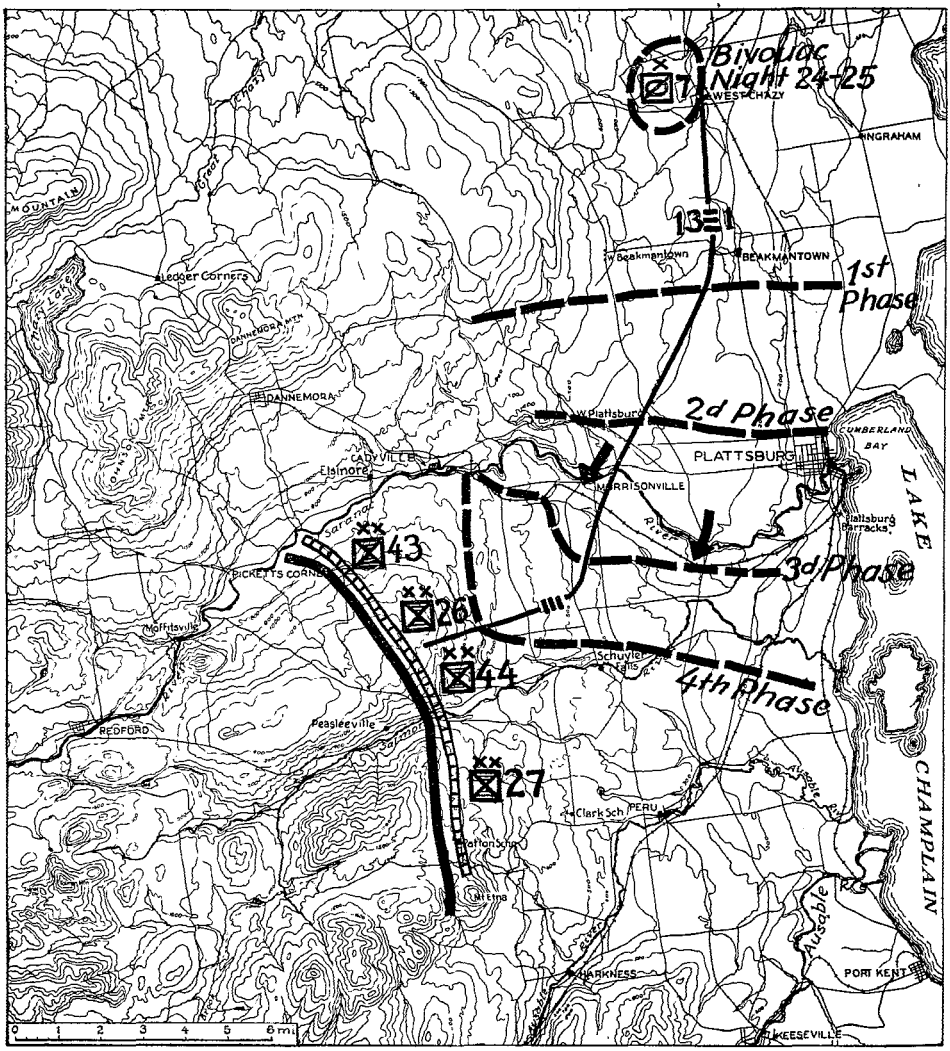
By 9:00 AM the 13th Cavalry had succeeded in pushing to RAND HILL but was held up by a Black battalion strongly supported by antitank artillery. The 1st Cavalry was ordered to assist by flanking action from the east, then resume its advance.

Following the combined attack to complete the occupation of RAND HILL, terrain that dominated the entire area northeast of the SARANAC, the 1st Cavalry was directed to seize the high ground about 2 miles northeast of WEST PLATTSBURG to assist the movement of the 13th Cavalry to the southeast. There was another purpose behind this plan — to clear the area in order to permit fuel vehicles to move safely to make urgently required replenishment of fuel.

By the middle of the morning it was apparent that the entire area north of the SARANAC was infested with Black antitank detachments ranging from single 75-mm guns supported by infantry to entire batteries supported by large infantry detachments. These detachments were installing road blocks



SKETCH NO. 3
OPERATIONS 7TH CAVALRY BRIGADE
DARK 23 AUGUST — DARK 24 AUGUST



SKETCH NO. 4
OPERATIONS 7TH CAVALRY BRIGADE
DARK 24 AUGUST – END OF EXERCISE

and completing assumed demolitions at the frequent defiles. From this time to the end of the maneuver the impression was gained that Black efforts were directed primarily to protection against the mechanized cavalry. Actually it is believed that a large part of the Black 75-mm artillery was dispersed in his rear areas as antitank guns. By 10:30 AM the Blue mechanized cavalry was deep in the Black rear area, moving rapidly from north to south across the rear installations.

By 12:30 PM, 24 August, the main body of the 1st Cavalry had reached the road: MORRISONVILLE — PLATTSBURG, with

reconnaissance elements south of the SARANAC (which was readily fordable in several places southeast of MORRISONVILLE). About 12:30 PM the 1st Cavalry surprised a Black tank company going into what would have been an excellent ambush. While in the ensuing action the hostile tanks were ruled out, undoubtedly this head-on engagement would have been costly to both groups of vehicles.

By this time (shortly after noon 24th) the Mechanized Cavalry Brigade had been continuously in action since 1.00 PM the preceding day. Part of the units had had one hasty meal Necessary refueling and maintenance had been sketchy indeed. All ranks, but especially combat vehicle drivers, were fast approaching exhaustion though still filled with admirable enthusiasm and aggressiveness. Accordingly, orders were dispatched to withdraw all elements of the brigade well to the north to the vicinity of WEST CHAZY for rest, reorganization and refueling. (Actually it is believed that this move was in conformity with the desires of the Maneuver Director in order to prevent the complete collapse of the remaining scheduled exercises the extension of the Black envelopment combined with a night attack, Blue night withdrawal, and a daylight attack by Black on the 25th since the mechanized cavalry was in position to continue directly across the Black rear areas.)

The 7th Cavalry Brigade completed its assembly in the WEST CHAZY area late in the afternoon in a torrential rain, trains joined units, all elements refuelled, the area outposted, much needed rest gained, and plans announced for a resumption of the advance early 25 August.

OPERATIONS, DARK 24 AUGUST TO END OF EXERCISE

(See Sketch No. 4.)

The plan of operations for 25 August provided:

The brigade to advance to the south, force a crossing of the SARANAC, seize the high ground as far as the SALMON RIVER, then turn to the southwest to strike the Black left flank and rear.

Regiments to advance abreast in more than one column, the 13th Cavalry on the right; advance guards crossing the outpost line at 5:00 AM; reconnaissance detachments moving at 2:00 AM.

One Combat-car Troop 13th Cavalry to follow 1st Cavalry as reserve.

Trains to assemble and await orders in bivouac area (vicinity of WEST CHAZY).

The advance to the south was initiated as planned. By daylight, reconnaissance elements had crossed and were south of the SARANAC. North of the SARANAC the main brigade columns encountered frequent antitank 75-mm guns and groups of guns which were promptly reduced by flanking maneuver. By 6 30 AM the brigade was crossing the SARANAC at the bridge northeast of BM 294 (about 5 miles southwest of PLATTSBURG). Shortly afterwards, the 13th Cavalry encountered serious resistance at the bridge at MORRISONVILLE (batteries of 75-mm guns and machine guns) which were being reduced when the exercise terminated. Here the 13th Cavalry surprised and captured important Black installations. The 1st Cavalry was moving to the south of the SARANAC as were reconnaissance elements deep in Black rear. The exercise was terminated shortly after 7:00 AM, 25 August.

LESSONS

In drawing any conclusions from the operations recounted above, it must be appreciated that: this was a peace-time maneuver with certain necessary ground rules; Black units did not possess mobile antitank means; and a large part of the terrain of the maneuver area was admittedly highly unfavorable for mechanized operations. Nevertheless, certain general lessons with regard to mechanized operations, important to the components of our Army, stand out.

1. The exercise should have impressed participating commanders and units with the potentialities of this powerful, hard hitting, highly mobile force — mechanized cavalry.

2. The strategical as well as the tactical possibilities of mechanized cavalry were well illustrated in the operation pictured. Initially engaged wide against Black south flank and rear, the 7th Cavalry Brigade later was shifted rapidly to meet a serious threat to the Blue north flank. The execution of the changed mission required assembly of the brigade in darkness and its rapid march without lights to the threatened flank.

3. Terrain must be extremely difficult to constitute a complete barrier to mechanized cavalry. More unfavorable terrain than the western part of the Plattsburg area would be difficult to find. Yet the 7th Cavalry Brigade was able to reach the flanks and rear of the opponent in a locality and at a time that would have been disastrous to the Black forces

4. The problem of defense against a highly mobile force such as mechanized cavalry is extremely difficult. Dispersed antitank dispositions will retard the movements of mechanized cavalry but in the end will be ineffective. Antitank groups held centrally may, when discovered, be contained and outmaneuvered. It would seem that the *answer is mechanization to counter mechanization.*

5. Powerful, highly mobile forces such as mechanized cavalry units exercise a definite morale influence on troops; it gives confidence to and raises the spirit of friendly troops while making enemy troops apprehensive and subject to sudden demoralization. Therefore, maximum opportunity should be afforded components of our Army to observe and train with mechanized units.

6. The 7th Cavalry Brigade, Mechanized, demonstrated its high value and effectiveness in mobile operations - though the maneuver terrain was far from favorable to its best and most effective employment.

Directory of Periodicals

Included in this directory are only those periodicals from which articles have been selected. See also, "List of Periodicals Indexed and Key to Abbreviations."

MILITARY AND NAVAL PERIODICALS

Joint Forces

	PAGE
Fighting Forces (Great Britain)	97
Journal of the Royal United Service Institution (Great Britain)	98

General Military

Army Quarterly (Great Britain)	96
Bulletin Belge des Sciences Militaires (Belgium)	96
La France Militaire (France)	97
Journal of the American Military Institute	98
Krasnaya Zvyezda (Russia)	98
Militarwissenschaftliche Mitteilungen (Austria)	100
Militarwissenschaftliche Rundschau (Germany)	100
Militar-Wochenblatt (Germany)	102
Revue Militaire Suisse (Switzerland)	115
Wissen und Wehr (Germany)	119

Arms and Services

ARTILLERY

Coast Artillery Journal	97
Field Artillery Journal	97
Rassegna di Cultura Militare (Italy)	109
Revue d'Artillerie (France)	110

CAVALRY

Cavalry Journal	97

CHEMICAL SERVICE

Chemical Warfare Bulletin	97

ENGINEERS

Military Engineer	107
Pionere (Germany)	109
Rassegna di Cultura Militare (Italy)	109
Royal Engineers Journal (Great Britain)	119

INFANTRY

Infantry Journal	98
Revue d'Infanterie (France)	113

MEDICAL

Army Medical Bulletin	96
Journal of the Royal Army Medical Corps (Great Britain)	98
Military Surgeon	107

ORDNANCE

Army Ordnance	96

QUARTERMASTER

Quartermaster Review	109

TANKS

Panzertruppe (Germany)	107

Navy and Marines

Marine Corps Gazette	100
Naval Institute Proceedings	107

General

Foreign Affairs	119

Catalog of Selected Periodical Articles

This section catalogs the articles selected from Library periodicals for the current quarter. Periodicals in this catalog are arranged alphabetically.

ARMY MEDICAL BULLETIN

October 1939

WAR AND MEDICINE. THE TREATMENT OF WOUNDED IN THE PRESENT CONFLICT IN CHINA - BUREAU OF INFORMATION, WAR DEPARTMENT, JAPAN

A MEDICAL HISTORY OF GENERAL ZACHARY TAYLOR'S ARMY OF OCCUPATION IN TEXAS AND MEXICO, 1845-1847. Lieut Colonel Duncan

ARMY ORDNANCE

November-December 1939

THE ARMS EMBARGO ADDRESS OF THE PRESIDENT OF THE UNITED STATES

THE EDUCATIONAL ORDERS LAW AS ENACTED BY THE UNITED STATES CONGRESS

January-February 1940

CHANGELESS WAR. MODERN METHODS HAVE NOT ALTERED THE FUNDAMENTALS General George C Marshall, Chief of Staff, U S Army

THE ORDNANCE OF OUR ARMY (Pictorial)

ANTIAIRCRAFT ARMAMENT. THE GUNS AND FIRE CONTROL FOR AIR RAID PROTECTION. Colonel Barnes

ARMY QUARTERLY (Great Britain)

January 1940

THE RAPE OF POLAND Compiled from German statements in the neutral press, German communiques, press notices and conversations.

THE INDUSTRIAL WAR POTENTIAL OF THE UNITED STATES OF AMERICA. Dr Fritz Sternberg

THE SECOND GERMAN WAR, 1939 THE FIRST THREE MONTHS Lieut. Colonel de Watteville

THE GERMAN ARMY AND THE WAR. Herbert Rosinski

THE WAR AT SEA. THE FIRST THREE MONTHS

NAPOLEONIC PRECEPTS FOR ATTACK AND DEFENCE AS APPLIED TO MOTORIZED FORCES Graham Shepard

BULLETIN BELGE DES SCIENCES MILITAIRES (Belgium)

BY CAPTAIN W E. LORENCE, Corps of Engineers

July 1939

GERMAN TANK TACTICS.

[Tactique allemande des chars de combats.] Major Callens

During the war, 1914-1918, Germany was slow to recognize the importance of tanks At the close of the war Germany only had about 50 tanks in service Germany has since intensified her efforts on mechanized forces and in 1938 had 5 mechanized divisions. She probably has from 10 to 15 such divisions today

German tanks are of three types light, medium and heavy. They are similar in general shape, differing only in weight and armament. The light tanks, weighing 6 to 7 tons, carry 2 light machine guns; the medium tanks of 12 to 15 tons carry 2 light machine guns and a 37-mm gun; the heavy tanks of 20 to 25 tons carry 2 light machine guns, a 37-mm and a 75-mm gun. Photographs of all three types illustrate the article

German tank tactics favor independent tank action. This differs from the French school of thought which favors close cooperation with the infantry

The Germans say that a close cooperation of tanks and infantry would deprive the tanks of their mobility, and in certain cases make them likely prey for the hostile defense. Tanks and infantry generally have the same objective, namely the hostile artillery However, terrain is a decisive factor as to whether tanks will move in the same direction as the infantry or follow different routes. During combat the other arms must coordinate their activities to those of the tanks. During a tank attack, the infantry takes advantage of the attack to quicken their progress, the artillery interdicts hostile fire, observation and cover; the engineers remove obstacles and assist tanks across difficult terrain, aviation supports the tanks by spotting hostile antitank weapons, artillery and reserves and signals the approach of hostile tank attacks. Smoke facilitates tank attacks.

Surprise is essential to success. Preparations prior to combat includes proper reconnaissance of the terrain and coordination with the supporting arms in order that movements to attack positions and the jump-off conserve the great benefit of surprise.

The Germans employ massed tank attacks which smash through by sheer weight. During the attack, tanks are disposed in three waves, each with a definite objective. The first wave's objective usually is the hostile antitank guns and the artillery; the second wave, the hostile front line, and the third wave, the close support of the attacking infantry Single tanks, like scouts, precede the first wave in order to draw the hostile antitank fire and force the disclosure of their positions Units move forward toward their objectives by a series of short bounds Tank attacks are marked by audacity, rapidity and flexibility

The author then proceeds to illustrate the above principles by giving three short, illustrated problems drawn from recent German articles in "Die Panzertruppe"

NAVIGATION BY RADIO FOR MILITARY AIRPLANES.
(Le guidage par T.S.F. des avions militaires.) Captain de Callatay

A technical article on navigation by radio for military airplanes. The author discusses the use of the radiogoniometer, the radiogoniscope, radio beacons, the radio-compass and their application to aviation.

ARMORED PROTECTION FOR AIRPLANES.
(Le blindage des avions.) Colonel Desmet

Practically no airplanes are protected against bullets and shell splinters However, there is no doubt of the great interest in the possibilty of such protection.

Unfortunately, armored protection means increased weight The vulnerable parts might be given partial protection, but only at the expense of speed which is itself the best form of protection Gas tanks of elastic materials, which closed up after the passage of a bullet, were tried in 1917 and were said to have had some degree of success Armored protection of the engines would interfere with their cooling systems Some protection might be developed to protect the pilot from the rear All in all, a difficult problem, but one that should be considered.

THE ORIGIN AND HISTORICAL BACKGROUND OF THE BELGIAN ARMY
(Origines et filiation de l'Armée belge.) (I) Colonel Verhaegen

In the first installment the author traces the origins and historical development of the Belgian regiments from the time when Caesar conquered Gaul to 1830 when it was known as the Holland-Belgian Army, or the Army of the Low Countries.

August 1939

RAID ON A GERMAN OUTPOST IN FRONT OF NIEUPORT, 8-9 APRIL 1918
(Raid sur le P.P. allemand en avant de Nieuport, 8-9 avril 1918.)
Captain Corvilain

A description of a raid by a small party of nineteen men on a German outpost in front of Nieuport during the night 8-9 April 1918, in which eight were killed and ten wounded.

GENERAL RENNENKAMPF JUDGED BY HIS BROTHER OFFICERS
(Le Général de Rennenkampf jugé par ses compagnons d'armes.)
(I) J. Savant

The first installment of General Rennenkampf's career collected from many sources by a historian who has specialized on Russian military operations during the War of 1914-1918.

The General graduated from the Military Academy in 1873 and was commissioned as a sub-lieutenant of the 5th Uhlans of Litowsk. After graduating at the head of his class from the War College in 1882, he held various important staff appointments. In 1891 he was chief of staff of the 14th Cavalry Division; in 1895 Colonel of the 36th Dragoons; and in 1900 was promoted to General. During the campaign against the Boxers in 1900-1901, General Rennenkampf commanded a column of Russian troops in Manchuria where he distinguished himself by making several successful forced marches. The author documents General Rennenkampf's operations in Manchuria with many interesting accounts written by brother officers of the General

THE ORIGIN AND HISTORICAL BACKGROUND OF THE BELGIAN ARMY.
(Origines et filiation de l'Armée belge.) (II) Colonel Verhaegen

The second installment of the historical development of the Belgian regiments This installment covers the period from 1830 to the reorganization in 1913, and discusses the organization of the infantry, cavalry and artillery regiments since 1913.

BELGIAN MILITARY PARTICIPATION IN THE INTERNATIONAL WATER EXPOSITION AT LIEGE.
(Participation militaire belge à l'Exposition Internationale de l'Eau, à Liége.) Major General Van Daele

The author, who was President of the Military Commission appointed to the Exposition, describes the military exhibits at the International Water Exposition held at Liége in 1938 The exhibits included models illustrating protective devices against inundations, sanitary installations for barracks, army water purification units, engineer pontoon equipage, river crossing expedients and field shower baths used during the War of 1914-1918

CAVALRY JOURNAL

November-December 1939

THE SEVENTH CAVALRY BRIGADE IN THE FIRST ARMY MANEUVERS. Brigadier General Chaffee
AN OBSERVER AT THE FIRST ARMY MANEUVERS Major Heavey
CAVALRY DIVISION MANEUVERS, OCTOBER, 1939. Lieut. Colonel Schwien
THE GERMAN CAMPAIGN IN POLAND Lieut. Colonel von Wedel, German Army
LITTLE PHIL. Part II. Fletcher Pratt
THE NINE TROOP REGIMENT
GENERAL HAWKINS' NOTES OBVIOUS CONCLUSIONS

CHEMICAL WARFARE BULLETIN

October 1939

THE BROAD VIEW OF CHEMICAL WARFARE. Major General Baker
CHEMICAL SUPPORT OF INFANTRY Lieut. Colonel Prentiss

COAST ARTILLERY JOURNAL

November-December 1939

GERMAN AA ARTILLERY TODAY. Major Roberts
THE NEW DIVISION Lieut. Colonel Ingles
LITTLE PHIL. Part II Fletcher Pratt
THE GERMAN CAMPAIGN IN POLAND Lieut. Colonel von Wedel
STORY OF ARTILLERY THROUGH THE AGES. W. A. Windas

January-February 1940

NATIONAL DEFENSE AND ANTIAIRCRAFT DEFENSE. Major Phillips
HOFFMANN. H. A. DeWeerd
BACKGROUND FOR LIGHTNING WAR Brigadier General Reilly
THE STORY OF ARTILLERY THROUGH THE AGES. W. A. Windas

FIELD ARTILLERY JOURNAL

September-October 1939

MILITARY ASPECTS OF THE SUDETEN CRISIS Colonel Lanza
SOME LESSONS FROM THE SPANISH WAR

November-December 1939

MARCHING ANIMAL-DRAWN FIELD ARTILLERY Major General Danford
THE GERMAN CAMPAIGN IN POLAND Lieut. Colonel von Wedel, German Army
GUNNER IN LUZON Brig. General Scott, Retired
OPEN WARFARE. Colonel Lanza

FIGHTING FORCES (Great Britain)

December 1939

THE POLISH CAMPAIGN Lieut. Colonel Burne
THE WESTERN FRONT
THE NAVY AT WAR
THE WAR IN THE AIR. By Our Air Correspondent

LA FRANCE MILITAIRE (France)

BY MAJOR T. R. PHILLIPS, Coast Artillery Corps

11 July 1939

UTILIZATION OF THE CZECHS IN CASE OF WAR.
(L'utilisation des Tchèques en cas de guerre.)

The Berlin correspondent of the Swedish newspaper, "Daghens Nigheter," is among the best informed of foreign journalists in Germany. While having close connections with governmental circles, he retains complete

independence and his correspondence is read attentively, not only by other journalists, but also by diplomatic and political agents

He has recently received information on Hitler's plans concerning the new European colony of Germany. It is to be expected that the seven million Czechs will be included in the preparations for war and used for labor at the front in case of war But the military mobilization of the Czechs runs into considerable difficulties of which the present leaders in Germany are perfectly aware

If the Czechs are sent to the front they will pass over to the enemy, that is to their friends, and will start the formation of their legions against German to the extent of their strength, and under any circumstances they will be an element of dissolution and sabotage in the German army

In consequence the Czechs, according to the information of the Swedish journalist, are destined to become the principal element of a "civil army" The labor of the Czechs will be used in the development of German industry and agriculture particularly, during war But in order to prevent resistance and sabotage in considerable dimensions, it has been resolved to distribute progressively almost all the Czech population fit for labor all over Germany and in place of Czechs, Germans will be installed in Bohemia and Moravia. By this procedure three objects are attained use of Czech workers for war, weakening of Czech resistance, and finally complete dispersion of the Czech nation This procedure is well known to the Germans and more than once has given good results in the course of history

The principal mission of von Neurath consists precisely in directing the administrative system of the "protectorate" for the industrial mobilization of the Czechs and at the same time in preparing their complete liquidation as a nation The Swedish correspondent ends his dispatch by affirming that the Nazis, in spite of all their efforts, will not succeed in destroying the Czech nation. In time of war, Hitler must surmount the resistance and sabotage not only of the Czechs, but of the Germans themselves

"In the middle of all the present inquietudes," he writes, "the will of the German people for peace is inflexible. The man in the street, the magazine dealer, the waiter in the cafe, the sales girl behind her counter, all openly and clearly express their opinion: 'We hate war We do not want war We can be forced to go to the front, but what good will it do? In 1914 we believed in victory Today we all know that war cannot end for us except in catastrophe'"

7 October 1939

COOPERATION OF TANKS AND AVIATION.
[Travail en commun entre chars et aviation]

The correspondent of "Popolo d'Italia" with the German armies has recently explained, in light of a concrete case, how German aviation and tanks aided the progress of German troops in Poland The correspondent claims to have observed this himself in southeastern Poland

A battalion of German tanks found itself at the edge of a woods under heavy fire from Polish artillery It would have been necessary to call on German heavy artillery for counterbattery, but this was far away and it was necessary for the column of tanks to progress rapidly

The local commander, informed of the situation, sent for help from an aerial squadron of "Fieseler Storch" airplanes which had been used in Spain to test their performance The squadron selected a landing field close to the combat area and in a few hours, with the help of a transport squadron, had supplied it with sufficient gasoline, bombs and munitions The squadron proceeded then as follows in exactly sixteen minutes the airplanes reached the combat zone, dropped their bombs and returned for more This maneuver was facilitated by radio communication between the assault troops, the aviation and the commander The squadron attacked in two flights, the first dropping bombs, while the second, flying at low altitude, fired its machine guns into the woods

After the first attack with 110-pound bombs the forest became observable and it was possible to locate the Polish batteries In the second flight, more bombs were dropped and the machine-gunning planes flew at 50-foot altitude. The secret the forest protected was then discovered four batteries of heavy artillery covered a brigade of cavalry which was bivouacing in the woods The bomb explosions had destroyed trees, turned over guns, hit horses and cannoneers. The planes with machine guns, which kept continually returning, annihilated the rest

An hour later an observation plane took a photograph of the part of the woods that had been attacked The four batteries had been reduced to silence, the crews had disappeared and the route was open Almost all the airplanes had been hit, some aviators had been wounded, but the motors had not been damaged

17 October 1939

THE MILITARY SITUATION OF HOLLAND
[La situation militaire de la Hollande]

The "Bund" (Berne) of 3 October published a communication from Amsterdam of the end of September on the remarkable military effort accomplished by Holland

More and more, states this communication, the Dutch fear for their country, despite the strictest neutrality they are able to assure, and will deem themselves fortunate if they are not involved in the conflict, especially on account of the blockade and the incidents brought about by aviation.

Thus it is not astonishing that Holland has made every effort to defend herself in case neutrality fails This people of seven million has mobilized 650,000 men, at a cost of 15 million florins and the upkeep of this army amounts today to two million florins a day.

Without any doubt the Dutch can assure a portion of their defense, thanks to their geographic situation, for they can inundate certain parts of the country and thus make it impossible for the adversary to employ his tanks and heavy artillery; but the country has not omitted, in recent years, to take measures for its defense.

Military service has been prolonged and the numerous exemptions from military service has been radically suppressed, the work of fortification of the frontiers has been accelerated and the equipment of the army has been reinforced in the domain of field artillery, antiaircraft artillery, machine guns and aviation; besides the fleet has been developed by the addition of many submarines and mine layers.

Holland possesses at the present time 1,000 modern airplanes and more than 40 submarines. Her war material, which has been constructed in the larger part in America, England, and Sweden, and some in Germany, is most modern

Four months ago it was officially stated that there were only 42 forts and casemates along the frontier, today, according to two competent observers, there are more than 1,200 casemates along the same frontier.

Holland can raise 1,600,000 soldiers, of whom a million have already received military instruction and are fit for service at the front

Certain districts in the region of Utrecht have already been inundated. Parallel to these measures of a military order, measures have been taken in the interior, notably in the domains of economics and antiaircraft defense; new taxes have been imposed to augment the power of the army, the navy and aviation. the inhabitants of each house have received cards for rationing food The authorities of old Amsterdam have authorized an expenditure of four million florins for the construction of shelters against aerial attack and other cities like the Hague and Rotterdam have followed this example. Some private enterprises have done the same. business establishments have allotted five million florins to protect their places, for the purchase of sacks, sand and construction of shelters. the larger part of the banks and newspapers are surrounded by sand bags, the interior of the banks resemble trenches, with only narrow passages to get to different counters and bureaus.

The parks and gardens of the Hague and other cities are crossed and dug with trenchs and shelters; instructions for nurses are being conducted and evacuation of the large cities has been prepared

Night and day, mine layers are at work around Dutch waters, so well that fishing boats cannot leave their home ports, a sortie being so filled with peril Against aerial action over their territory which is happening, aviation patrols have been detached along the frontiers, and on the other hand, the cities are brilliantly lighted, sometimes the lighting lasting both day and night, and on many buildings have been placed enormous Dutch flags which are lighted at night with searchlights in order to warn foreign aviators

INFANTRY JOURNAL

November-December 1939

FIRE POWER MAN POWER MANEUVER. Major General Lynch
LITTLE PHIL. Part II. Fletcher Pratt
THE NEW DIVISION Lieut. Colonel Ingles
SUPPLY IN THE NEW REGIMENT Lieut. Colonel Livesay
THE GERMAN CAMPAIGN IN POLAND. Lieut. Colonel von Wedel
IRON AND STEEL. Dr. Fritz Sternberg

JOURNAL OF THE AMERICAN MILITARY INSTITUTE

Fall 1939

THE COMMITTEE ON THE CONDUCT OF THE WAR AN EXPERIMENT IN CIVILIAN CONTROL. T. Harry Williams
AMERICAN MILITARY DRESS IN THE WAR OF 1812. I: Introduction. Hugh C McBarron

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS (Great Britain)

November 1939

PREVENTIVE MEDICINE IN RELATION TO AVIATION. Air Commodore Whittingham
MEDICAL PROBLEMS OF AVIATION E Jokl, M D. A Pilot

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION (Great Britain)

November 1939

AUSTRALIA'S DEFENCES
THE GERMAN NAVY OF TO-DAY. Francis McMurtrie
THE GERMAN ARMY IN 1939. Lieut. Colonel de Watteville
THE GERMAN AIR FORCE
THE INTERNATIONAL SITUATION: DIARY OF THE WAR AGAINST GERMANY, 1939

KRASNAYA ZVYEZDA (Russia)

BY LIEUTENANT JOSEPH DASHER, O. R. C.

26 August 1939

OVERCOMING WATER OBSTACLES IN DAYTIME.
[Preodolenye vodnoy pregrady dnyom.] Colonel Kolesnikov

In addition to the usual elementary principles of preparing a regiment for crossing a water obstacle, the author points out the necessity of reconnaissance, conducted personally by the regimental commander. This reconnaissance is in reality a conference between the regimental commander, members of his staff, leaders of the various supporting arms and specialist detachments. The conference should take place at some convenient vantage point, whence the enemy front line of resistance is visible.

28 August 1939

JOINT ACTION BY HORSE CAVALRY AND TANKS.
[Sovmestniye deystvya konnitsy i tankov.] Brigade Commander Nikitin

Not infrequently situations arise in action when close cooperation between tanks and horse cavalry is indispensable. During recent years there were several examples illustrating this point. On 29 October 1936, tank units of Spanish Republican forces advanced, and after passing the line of insurgent trenches at Sesena, reached a point some 6 to 7 miles in the enemy rear and dispersed a battalion and a half of insurgent infantry. No prisoners were captured, however, and the tanks were compelled to return to their own lines without retaining the territory thus captured.

Another example. On 18 November 1931, the Japanese 2d Infantry Division was advancing on Tsitsikar. The Chinese 54th Cavalry cleverly turned the Japanese flank and penetrated into the rear of the Japanese division. The Chinese movements, however, proceeded too slowly due to constant resistance, weak though it was, from the rear elements of the Japanese. Thus, the surprise feature of the Chinese maneuver was rendered ineffective, and the Japanese command gained sufficient time to make good use of its last reserve — aviation, which saved the situation.

In each case results could have been very much different had cooperation between horse cavalry and tanks been organized.

9 September 1939

OVERCOMING OF THE SECTOR OF ERECTED AND CHEMICAL OBSTACLES BY THE OUTPOST BATTALION
[Preodolenye avangardnym batalyonom polosy inzhenerno-khimicheskikh zagrazhdeniy.] Major Fimtskiy

An expose of commonly known principles of antigas defense in combat.

12 September 1939

PLANNING FIRE FOR ARTILLERY GROUP ACTING IN SUPPORT OF INFANTRY.
[Planirovanye ognya artilleriyskoy gruppy podderzhki pekhoty.] Colonel Lebedev

Soviet theories on the subject seem to be well illustrated in the following example, quoted by the author.

Firing is being planned against groups of targets. The artillery preparation is to last 3 hours. The artillery battalion consists of two 76-mm batteries, and one 122-mm battery. The average expenditure for one hectare: 300 rounds of 76-mm shells, 200 rounds of 122-mm shells. The possibilities are calculated thus

EIGHT 76-MM GUNS

$$\frac{8 \cdot (120 + 90 + 90)}{300} = 8 \text{ hectares}$$

FOUR 122-MM GUNS

$$\frac{4 \cdot (90 + 65 + 65)}{200} = 4\ 4 \text{ hectares}$$

Total area of 12 4 hectares will thus be covered.

14 September 1939

PURSUIT CRAFT IN COMBAT.
[Istrebiteli v boyu.] Captain Semyonov

In recent wars pursuit aviation has been based most frequently in the vicinity of large industrial and communication centers, and in the direction of action of own land forces and bombing aircraft. The effectiveness of pursuit craft depends in a great measure upon the distance between its base and the front. Bases are selected upon the principle that pursuit craft must not be either late or premature in taking off for combat. When concentrated for defense of industrial centers, pursuit craft should be based 6 to 18 miles from the latter, enabling it to cover the distance in 3 to 8 minutes, to gain proper altitude and engage the enemy.

On the other hand, bases for pursuit craft which are designated for protection of operations of the land forces must take into account not only the principle of being able to reach the front line in shortest time possible, but also to be placed beyond the range of enemy artillery fire. Distance of 5.5 to 8 miles behind the front line should protect pursuit craft from such fire.

15 September 1939

SUPPORT OF TANKS BY INFANTRY FIRE.
[Podderzhka tankov ognyom pekhoty.] Captain Kolomeytsev

Because antitank guns are usually so placed as to render them fairly immune to fire, the author recommends the use of own antitank guns against them. Advancing behind tanks together with infantry, and using terrain features for protection, the antitank gun will be very effective against the enemy antitank guns at medium distances (800 to 1,200 yards).

The applications of the machine gun, mine thrower, rifle grenade, hand grenade, and the bayonet, in joint action with tanks, are also discussed.

23 September 1939

SECURING OF OFFENSIVE OPERATION BY ENGINEERS.
[Inzhenernoye obespechenye nastupatelnoy operatsii.] Division Commander Karbyshev

During the period of combat inside of the defensive zone, infantry and tanks need artillery support. It will be necessary to erect passages for the artillery through obstacles. Tracks for artillery columns will be needed, when changing position. These same tracks will be used by the advancing forces for communication with the rear. Although tanks will advance en masse, passages will have to be made through antitank and natural obstacles. For artillery and other vehicles one column track will be required for each 1 to 2 kilometers of the breakthrough.

One company of pioneers with mechanized equipment for each column track (at the tempo of laying 1 kilometer of track per hour). Altogether, six companies of pioneers will be needed in the area of advance. Pioneers are detailed by the corps, and engineering units by the army.

24 September 1939

CAMOUFLAGING ARTILLERY FIRING POSITIONS.
[Maskirovka ognevykh pozitsiy artillerii.] Major Badanin

Elementary principles of camouflage, and particularly the use of natural means (trees, branches, bushes, etc.) are discussed in this article.

27 September 1939

THE REAR OF A TANK BATTALION
[Tyl tankovoyo batalyona.] Major Shchegorev

In order to plan properly the work of the rear area of a tank battalion it is necessary

(1) To establish the exact quantity of ammunition and fuel, and the order of replacements during combat.
(2) To form the echelons, and to designate the order of their transfer during combat.
(3) To organize repair and evacuation service during combat.
(4) To organize medical help and evacuation of casualties.
(5) To designate methods of command of the rear area, the organization of observation, liaison and supply.

11 October 1939

COMBAT IN A POPULATED POINT.
[Boy v naselyonnom punktye.] Lieutenant Kurbatov

On the basis of personal observations made during a recent two-day engagement between the Soviet and Polish forces for the possession of the city of Grodno, ultimately captured by the Red Army, the author draws the following conclusions:

Before advancing on a populated point, careful reconnaissance must be made through photography, reconnaissance patrols, questioning of local population, etc.

Before launching attack, the commanders of respective units are to be assigned missions of a strictly limited scope, such as clearing of a street, or the capture of a designated building. Captured places must be well protected, or at least patrolled.

The commander of every unit must have a plan of the whole city, and junior officers should have an outline of the streets where their unit is in action.

Upon entering the city the unit commander should send out a reconnaissance party which goes over the streets, placing double sentries at crossings. The sentries remain at their posts until the advance of the entire unit, to prevent the enemy from attacking the column from the flank or rear.

When prevented from advancing through yards and gardens, as required by the Soviet Field Regulations, infantry should proceed not in the middle of the street, but along sidewalks, observing windows on the opposite side. If fire is opened from windows or roofs on one side, the group advancing on the opposite side of the street replies with portable machine-gun fire, while the second group quickly enters the building and liquidates the enemy.

Tanks never should be separated from infantry. Handicapped by limited visibility the tanks cannot always notice the source of enemy fire, especially from upper stories or buildings, attics and roofs. Experience shows that infantry will indicate to tanks the majority of targets. Also, without infantry support tanks can easily fall into traps, while the infantry deprived of tanks suffers unnecessarily large casualties.

Regimental and antitank artillery should move along city streets either through motor-drawn means, or pulled by hand power. In conditions of street combat, horse-drawn means are not practicable, because they preclude speed in deploying. Firing positions should be selected at crossings, in gardens and parks, which affords wider scope of horizontal fire.

22 October 1939

THE MAGINOT LINE AND THE SIEGFRIED POSITION.
[Linya Mazhno i Pozitsya Zigfrida.] Division Commander Karbyshev

Discussion of the commonly known features of the two lines of fortifications.

28 October 1939

ANTITANK DEFENSE IN THE GERMAN ARMY.
[Protivotankovaya Oborona v Germanskoy Armii.] Press Digest

The antitank defense in the German army is very carefully organized. For this purpose 37-mm antitank guns are used exclusively. The shells

pierce armor 33-mm in thickness at a distance of 600 yards. The guns are moved by six-wheel caterpillar vehicles Before the war the Germans have experimented with a light type of 12-mm antitank gun.

The German infantry regiment has an antitank company with twelve 37-mm guns. Besides this, the infantry division has a motorized battalion of 36 guns of the same caliber Thus, the German infantry division has a total of 72 antitank guns

MARINE CORPS GAZETTE

November 1939

COUNTERBATTERY IN A LANDING OPERATION Lieutenant Henderson

SOME OF THE CAUSES OF ANCIENT AND MODERN WARS AND SOME OF THE REASONS FOR THEIR OUTCOME. Major General Lejeune

MILITARWISSENSCHAFTLICHE MITTEILUNGEN (Austria)

BY MAJOR WM H SPEIDEL, Infantry

July 1939

MILITARY ALLIANCE AGAINST ENCIRCLEMENT
[Militarbundnis gegen Einkreisung] Major General Paschek

In this review of the military and political situation for the second quarter of 1939, General Paschek presents a description of the British policy of encirclement against the Central Powers Stress is laid on the counterstrokes used to thwart the encirclement, particularly on the occupation of Albania by Italy

TECHNOLOGY AND THE MILITARY FORCES
[Technik und Wehrmacht] General v Eimannsberger

In the past the attitude of the German army against technical matters has been lacking in appreciation, the application of technical science was a matter of workshop consideration The army did not take readily to innovations It took the Austro-Prussian War to convince the Prussians that the needle gun was to be regarded as a valuable weapon In 1867 the French introduced the Reffye mitrailleuse which they used in the Franco-Prussian War. The employment of this weapon in batteries as though it were a piece of artillery proved to be unsound tactically Consequently the development of the machine gun was retarded until the World War

LESSONS OF THE SPANISH WAR
[Die Lehren aus dem Spanischen Krieg] Major General v Lerch

The article consists of abstracts from a book entitled "Les leçons de la guerre d'Espagne," by General Duval, an eye witness to the operations in Spain up to October 1937, at which time he was able to predict the final Nationalist victory. In a civil war the opposing parties are unprepared at the outbreak of hostilities, and for that reason the lessons to be learned from a war of that character are of less value than those to be learned from a war between two legitimate powers The Loyalists had no experienced officers, and were obliged to pursue the war with politicians Bodies of troops who offered their services were disarmed and the officers shot The sailors who revolted and joined the Loyalist cause murdered their officers In contrast, the Nationalists had experienced officers and could depend on the loyalty and reliability of the Moroccan troops.

THE PRODUCTION OF IRON AND STEEL, A FOUNDATION OF THE MILITARY FORCES
[Der Eisen- und Stahlerzeugung, eine Grundlage der Wehrmacht] Captain Klein

The principal asset to the military strength of a nation is her production of iron and steel. During a protracted war, this production must be maintained to the utmost. In this capacity England has made such little progress during several decades that she was forced from the foreground of iron and steel production and finally surpassed by Germany Beginning in 1932 she shot ahead, but was never able to reach the capacity of production which had been established by Germany. In 1938 the English output suffered a recession, while in Germany it continued to rise until it surpassed that of the United States The occupation of Austria and Czechoslovakia have added to Germany's capacity for the production of iron and steel, as well as her acquisition of new sources of iron ore.

August 1939

MARITIME PROBLEMS IN THE BALTIC
[Maritime Probleme im Ostseeraum] Admiral Gladisch

This article, accompanied by three sketches, stresses the value of the Baltic Sea to Germany Throughout the World War Germany was able to retain command of this sea Due to the importation of raw materials and iron ore from Sweden the Baltic is of particular value to Germany. It is also of vital importance to Scandinavia and the Baltic States. Russia is self-supporting without her Baltic trade. In the event of a war with Germany she would be likely to resort to the use of submarines in order to disrupt German communications In a restricted sea, like the Baltic, it would be difficult to offset the effects of submarine warfare by resorting to the convoy system. Little is known as to what effect might be expected from aviation. It is believed, however, that it will tend to decrease the value of the Kiel Canal.

WAR ECONOMICS.
[Kriegswirtschaft.] Major Oswald

One of the most valuable concepts of modern times is war economics. At the outbreak of hostilities the combatants entered the World War with practically no organization for the production of war material. Later on plans for industrial mobilization were developed, and today everything is so well regulated that every man, woman and child is familiar with the part each must play in war.

THE CONFLICT IN EASTERN ASIA.
[Der Konflikt in Ostasien.] Major General v.Lerch

This is a continuation of a series of articles on the Sino-Japanese conflict. This instalment covers the period 10 May to 15 July 1939. The April offensive conducted by Chiang Kai-shek against Hankow proved unsuccessful. The Japanese countered in May northwest of Hankow, a movement which led to a battle on the Han river Twenty-six Chinese divisions were engaged and they lost heavily. Following this battle, which proved to be one of the most decisive of the war, the Japanese occupied the ports of Swatow, Foochow and Wenchow. Then came the isolation of the British and French concessions in Tientsin and clashes with the Russians along the Manchurian border.

September 1939

THE GERMAN-RUSSIAN NON-AGGRESSION AGREEMENT
[Deutsch-Russischer Nichtangriffsvertrag am Vorabend der grossen Entscheidung] Major General Paschek

The final days in August carry the heavy burden of fate; it is the eve of the great decision whether we shall have peace or war. The non-aggression agreement of 23 August with Russia is Germany's latest success and perhaps the strongest world-political event since 1919. It has broken the encirclement in the East.

The article leads up to the stormy development involving Danzig and the Polish Corridor Can peace be expected in the final hour? Poland has undertaken the complete mobilization of her army, concentrations have already begun She is in a position from which, perhaps, she can no longer withdraw. In France the war material industries have been operating under military supervision for three years. England, as she did twenty-five years ago, again controls the deciding vote

CHANCE, ESTIMATION AND LUCK IN THE EVENTS OF WAR.
[Zufall, Berechnung und Gluck im kriegerischen Geschehen.] Colonel v Wittich

This article is a lengthy dissertation on the subject whether chance or opportunity is a preliminary form of fate. Many historical illustrations and quotations are presented for the reader to draw his own conclusions. The soldier, like the farmer, must depend to a great extent on the conditions of weather and terrain These are influences that must be reckoned with

MILITARISM AND NATIONAL SOCIALISM.
[Soldatentum und Nationalsozialismus] Colonel Poppauer

The author defines the German concept of militarism and outlines its development from its earlier conceptions to its present place of honor A justification for German National Socialism is presented with a relation of this political doctrine to the military character of the nation.

MILITARWISSENSCHAFTLICHE RUNDSCHAU (Germany)

BY CAPTAIN H D KEHM, Field Artillery

January 1939

COOPERATION BETWEEN SEPARATED PARTS OF AN ARMY
[Das Zusammenwirken getrennter Heeresteile] (I) Lieut General Erfurth

This article assumes that the strategy of Napoleon was essentially that of getting on interior lines and assembling his forces prior to the battle, so that he could be sure of massing his power at the decisive point. Moltke, on the other hand, moved separated forces from diverse directions, uniting them on the battlefield with overwhelming power (not necessarily numbers). The current installment covers the period from Frederick the Great through the Battle of Leipzig Had it not been for the lethargy of the victors, Napoleon would have suffered the fate of the Romans at Cannae. After Leipzig, military strategists should have appreciated the scheme of converging forces on the battlefield.

ON THE NATURE OF THE SOLDIERLY SPIRIT.
[Vom Wesen des Soldatentums.] Major General von Sodenstern

The national character can be greatly strengthened and improved by proper training and leadership in the military forces There is no place in National Socialist Germany for a corps of officers which confines its training solely to the use of weapons.

FOREIGN CONCEPTS ON MOTOR MARCHES.
[Gedanken des Auslandes über Marschbewegungen mit Hilfe des Motors.]

In general, troop movements by motor should be handled something like movements by rail, the equipment being assembled, routed, controlled

and operated by others than the commanders of the troops being transported In order to do this efficiently there should be an organization of several echelons, some of them being in control of areas which correspond to political subdivisions of the country. In time of war these district commanders would have charge of the routing and control of all motor traffic through their area In time of peace only the higher echelons would exist; their chief function would be in planning an effective system to be put into operation promptly on M-day. It is also contemplated that plans be made for organizing units capable of taking over areas in hostile territory and installing systems similar to the ones outlined above.

The air threat is the greatest menace to marching columns, but it is reduced by the speed of motor equipment. It is believed that marching at extended intervals is the most widely accepted method of guarding against the danger of hostile air attack and is almost certain of preventing hostile observation of columns at night

The chief asset of the speed of motor movements lies in the fact that the length of time on the roads is reduced Under European conditions speed is secondary; great distances would take the column out of the combat area, if not entirely out of Europe.

ATTACK IN THE ITALIAN ARMY.
(Der Angriff im italienischen Heer.)

The infantry division carries out a series of attacks in the zone of action of the corps. Its organization is especially suited for the offense. Since the division has no infantry reserves available, it is not in a position to exploit its successes. Exploitation is a corps function Ordinarily the corps attacks with two divisions in line on a front of about 2,200 yards each, and the third in reserve The latter is used as a maneuvering force for the corps.

Each division employs its artillery in direct support of the infantry For special artillery missions in the zones of the divisions, additional battalions are made available. Long-range missions and counterbattery are executed by the corps artillery under command of the corps artillery commander

An attack begins with an approach toward the enemy The attacking troops move in many columns employing as many roads as possible The approach march develops into contact with the enemy, which is the task of reconnaissance detachments (cavalry, cyclists or mechanized forces) attached to corps and of infantry reconnaissance detachments sent forward from the divisions as the circumstances require The infantry reconnaissance detachments consist essentially of a reinforced battalion If armored vehicles are available to the division, a company of light tanks, or a portion thereof, is generally attached to the battalion After contact is gained and information becomes available, advance elements are required to take objectives which will facilitate the attack of the bulk of the division later on.

After the advance elements have driven back the hostile outposts and gained suitable areas from which the attack may be launched, the division moves to its assembly areas. The conception of assembly areas is not as well defined in the Italian as in the German army. The Italian term is "line of departure" Preparations for the attack are made as quickly as possible so that the enemy may have the least possible time to prepare his defense

Italian views on the attack coincide with those of the German Frequently the Italian divisions attack in columns on account of the mountainous character of the Italian terrain The attacking force is assigned a line of departure, a boundary with its neighbor, intermediate objectives, a battle objective and an eventual objective. The latter is to be reached if circumstances permit. Provision is made for a mobile command post in hostile areas when a penetration has been effected

Exhausted units are to be relieved promptly. Two schools of thought on this subject prevail. According to one the relieving unit passes through the one being relieved. This can be accomplished with success only when there is adequate space between our troops and the enemy. The other plan is the ordinary plan of relief There is much controversy in Italian military literature concerning the first-named scheme Many believe the plan dangerous of execution and that it seldom can be accomplished without involving the relieving troops in an unplanned fight under unfavorable circumstances

The corps exploits the success of a breakthrough by one of its front-line divisions by employing the corps reserve and highly mobile troops (Bersaglieri, cavalry and light tanks). Pursuit is the function of highly mobile units

Meeting engagements, as contemplated in German regulations, according to Italian concepts, will seldom occur It is the Italian view that one of the two hostile forces marching toward each other will usually halt and take up the defensive in order to utilize a given piece of terrain, because the hostile superiority is recognized or in compliance with the command of higher authority Meeting engagements will materialize only when two secondary attacks meet each other, such as both sides attempting to seize the same assembly area preparatory to some other action.

In the attack against positions the principles of mass and surprise are stressed The frontages are reduced (for a division 1,600 to 2,000 yards) and disposition in depth is increased The attack is to be very closely controlled and orders must be in considerable detail as to the mission and objective of each unit. The plan of attack is based on the results of reconnaissance and military intelligence The main attack (breakthrough) is supported by secondary attacks designed to deceive and immobilize the enemy. The approach to the hostile position follows the normal procedure until the assembly area is reached, the advance to the attack proper is made under cover of darkness or smoke. Artillery has the same mission as it has in the attack in open terrain. The organization of fires and the resupply of ammunition must be carefully planned and executed. They require more time than in other attacks The actual artillery preparation is of longer duration and may be supported by attacks of bombardment and pursuit aviation on the hostile position

The organization of signal communications, the repair of roads, traffic regulations, ammunition supply, etc., are accorded special attention. Italian leadership in this field, which they call "logistica," is masterful. The difficulties which they overcame in Lybia and Ethiopia have given them extensive experience.

Tanks may be assigned to particular units or they may be employed in mass (tank brigades) to effect a breakthrough. Ordinarily the tank brigade is employed in cooperation with other large units It has no separate missions After the proposed reorganization of tank brigades into tank divisions their missions will be extended

Because of the Italian temperament and the peculiar position of the country, the Italian army believes that a decision in battle can be gained only through the attack. The defensive is considered as an expedient and must be forsaken for the offensive whenever possible Counteroffensive and counterattacks are a part of defensive fighting being differentiated only in their form, the strength of the forces employed and in the designation of objectives The counteroffensive should terminate the defense and introduce fresh attacks

March 1939

TIRPITZ. Vice Admiral v.Trotha

The author traces the career of the German Admiral from his birth in 1849 through his retirement from active service in 1916 to his death in 1930.

Tirpitz entered the navy in 1865, at a time when Prussia was just coming to the realization that to become a world power she must be strong on the sea

Before he was 30 years old, Tirpitz was placed in charge of torpedo boat development, a project which he controlled for 12 years. It was during this duty that he pursued his studies of sea strategy and of the relations of sea power to national development.

After this tour of duty he was placed in command of a cruiser squadron in the Far East Leading the first important manifestations of German sea power in Asia, he was largely instrumental in the acquisition of Tsingtao by Germany.

In 1897 he was named secretary of state for the navy to replace a man who was unable to secure Reichstag approval of programs for naval expansion.

Like von Moltke, Tirpitz appears to have been possessed of an intense patriotism, a consuming faith that the navy (as Moltke conceived the army) was a great unifying force among Germans, and a driving energy to push through his plans The effectiveness of v Tirpitz' methods are too well known to require repetition here

Admiral v Trotha goes to some length to show that German naval policy did not bring on the World War. He quotes from a speech made by Winston Churchill in 1924 to approve his point.

The author points out that the opposition of political leaders, especially Bethmann Hollweg, frustrated Tirpitz' plans to wage an aggressive war on the sea and led to a vacillating policy on the use of the navy during the War.

After his retirement, Tirpitz became the head of the "Fatherland Party" and in March 1918 attempted to stimulate a "victory or death" movement. He failed in this attempt and found no comfort in the new order that obtained after Versailles He died protesting against this system and urging a return to the spirit that made pre-war Germany a great power.

COOPERATION BETWEEN SEPARATED PARTS OF AN ARMY.
(Das Zusammenwirken getrennter Heeresteile.) (II) Lieut. General Erfurth

In this, the second installment, the author explains the doctrines that were accepted on this subject in the time between Napoleon and von Moltke, and concludes by expounding Moltke's theory and practice.

THE TIME FACTOR IN THE ATTACK.
(Über die Zeitdauer von Angriffsgefechten.) General Seyer

The writer points out that the time element is generally neglected in peacetime problems and that there is a general impression that in war everything does and must move more slowly than in peace

THOUGHTS ON THE GERMAN NAVAL PROBLEM IN THE WORLD WAR.
(Gedanken über die Probleme der deutschen Seekriegführung im Weltkriege.) (I) Vice Admiral Aszmann

This study considers the questions why the war at sea was conducted as it was and whether it could have been conducted otherwise

In this installment the writer considers pre-war organization and concludes that it was faulty, in that the centralization of control which Tirpitz realized was necessary and thought would take place in war, could not be effected

THE PENETRATION AS APPLIED IN THE BATTLES IN THE YEAR 1918.
(Der Durchbruchsangriff, dargetan an den Kämpfen im Jahre 1918.) (I) Lieut. Colonel Solger

The penetration of strong hostile positions became the most important task confronting commanders early in the War. The fact that penetration on a wide front was a prerequisite to a successful breakthrough was recognized even before the War.

The point selected for the breakthrough should, among other things, permit of the tactical envelopment of elements of the hostile force. It should be one lightly or improperly held

Position warfare develops centralization because any operation requires the support of higher and neighboring units.

Surprise is of supreme importance. Detailed precautions must be taken to prevent the discovery of concentrations of troops and supplies at the point of the proposed attack. Hence bivouacs and areas must be prepared in advance, then supplies and equipment must be assembled, and finally the troops must be brought up.

German experience in the World War demonstrated that a breakthrough can be assured only after a penetration of the forward defensive lines and a decisive defeat of the reserves which are invariably brought up.

HIGHLY MOBILE TROOPS, THEN AND NOW.
[Schnelle Truppen einst und jetzt.] General Guderian

The author traces the historical development of fast troops, with special attention to cavalry, in a study to determine what history might indicate for the future of our present highly mobile units.

There are two general theories on the employment of tanks. The first considers them as an auxiliary to the infantry to facilitate operations of the latter. Though nations who hold this theory do not rule out their independent employment, they incorporate tanks in infantry units and have few independent tank units.

Russia is the greatest exponent of this theory, her tank units are a part of the infantry and are incorporated in the division and the corps. In France too, tanks belong to the infantry, but they are GHQ units to be allotted where required. They are employed in close cooperation with infantry. Mechanized units suitable for reconnaissance exist and heavy mechanized units are predicted.

The second theory, that tanks should be used independently, is embraced in England where tanks are organized into armored divisions.

Motorized divisions and the horse cavalry should, like tanks, be considered fast troops.

The importance which the western powers attach to tanks is evidenced by the fact that the Treaty of Versailles forbade their construction and use by Germany.

A German mechanized division consists, essentially, of a tank brigade, reconnaissance, rifle, and motorcyclist battalions, artillery, antitank, engineer, and signal detachments; air service, antiaircraft units and services. They are completely motorized.

The light divisions have a greater proportion of reconnaissance and rifle units and hence a small proportion of tanks. They were planned to be used like cavalry divisons, on distant reconnaissance, and are weak in attack power. It appears that air service has taken over much of their primary mission.

Motorized infantry divisions are simply infantry divisions in trucks.

Antitank troops should also be included in our consideration. Each division is supplied with them. Their strength and the method of their employment in cooperation with engineers and artillery must be considered in any survey of tank tactics.

The general conclusion must be that tanks may be employed in conjunction with, and to assist, the infantry, but they must be supported by artillery, signal troops, riflemen, and engineers (motorized or mechanized) to enable them to carry decisive attacks (without waiting on slower units) deep into the enemy's territory to prevent or hinder the employment of his reserves. Employment in mass and with surprise is a guarantee for success.

THE GERMAN INLAND WATERWAYS IN THE SERVICE OF THE NATIONAL DEFENSE
[Die deutschen Binnenwasserstrassen im Dienste der Wehrwirtschaft.] Dr Kinne

MILITAR-WOCHENBLATT (Germany)

BY MAJOR WM H SPEIDEL, Infantry

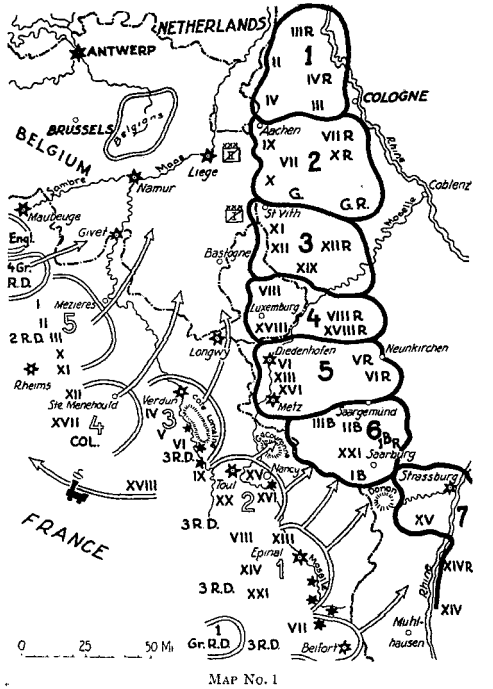
24 February 1939

PORTRAYING THE MODERN GENERAL
[Das Bild des modernen Feldherrn.] (1) General Wetzell

FIELD MARSHAL COUNT MOLTKE, COUNT SCHLIEFFEN AND THE WORLD WAR

During the World War, shortly after the outbreak of hostilities, the hostile situation was extremely favorable for the German High Command to have gained a swift decision on the Western Front. The breakwater created by the triangle of the fortifications of Metz—Diedenhofen—Nied had split the French armies into two widely separated groups. Almost one-half of the French forces were engaged in the invasion of Alsace-Lorraine where they were opposed by a strong German force. The defeat and repulsion of those forces against the Vosges Mountains and the German Rhine would have meant the fulfillment of one-half of the great idea which Schlieffen had incorporated in his operations plan of 1905. Ludendorff is of the opinion that the entire situation on the Western Front in this manner could have been decided in our favor at the very outset of the war. Another decisive blow could have been struck in the area between the Meuse and the Moselle, regardless of whether the French left flank extended beyond the Meuse or not, for the other half of the attacking French armies was bound to be in that area.

For a time General von Moltke II favored this plan, but he finally permitted his Chief of Operations Section, who considered the application of the Schlieffen Plan of paramount importance, to change his mind to the detriment of the entire course of the war. Schlieffen's plan, as originally



MAP NO. 1

conceived, had emanated from an entirely different disposition of the opposing forces.

Prior to the departure of the High Command from Berlin, 16 August 1914,* the following directives should have been issued, first by telephone, then by telegram:

(1) To the Fifth Army. The XVI and XIII Corps, VI Reserve Corps, including Main Reserve "Metz" and all horse-drawn units of the heavy artillery reserve at Metz to be placed under the command of the Commanding General XVI Corps. This group to take up positions in readiness in the fortified area of Metz—Nied. Its right flank resting on the Seille, to be prepared to attack in a southeasterly direction toward Luneville on the morning of the 19th. The Commanding General Group "Metz" to report to me at Saarbrücken, 5.00 PM, 17 August. (GHQ actually arrived at Coblenz at 4:30 PM, 17 August. It could have reached Saarbrücken at the same hour by routing the operations staff via Frfurt — Frankfurt — Kreuznach.)

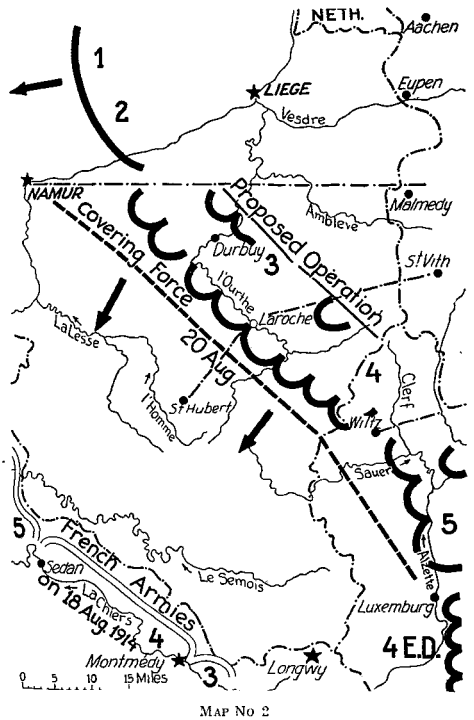
(2) To the Sixth and Seventh Armies. The main forces of the Sixth and Seventh Armies to withdraw beyond the Metz - Strassburg railroad to the line Bolchen — Saarunion and the area east of the Vosges Mountains. Further instructions to be issued upon my arrival at Saarbrücken, 5.00 PM, 17 August. The Army Commanders, their chiefs of staff and the Commanding General Group "Metz" (Fifth Army) to report to me there.

(3) To the First and Second Armies: Operations under the command of the Second Army Commander to be continued across the Marne in the general direction of Maubeuge (central line). The Deputy Chief of Staff to arrive tomorrow at Headquarters Second Army for further orientation and to remain there. The Second Army to release the X Corps, Guard Corps and Guard Reserve Corps to the Third Army tomorrow. The IX Reserve Corps and two Ersatz divisions to be transferred to the Second Army and to function temporarily as GHQ reserve. The I and II Cavalry Corps to remain on the right flank. The III Cavalry Corps to be removed from Alsace-Lorraine by rail and shifted to the right flank. Boundary to be arranged with the Third Army: approximate line Malmedy — Namur.

(4) To the Third, Fourth and Fifth Armies: Beginning 17 August the Second Army to release to the Third Army the X Corps, Guard Corps and Guard Reserve Corps. The Third Army to transfer the XIX Corps to the Fifth Army. The XVIII Reserve Corps of the Fourth Army to be assigned

*They should have left three to four days earlier. The operations could have been directed from Coblenz just as well as from Berlin.

to the Fifth Army. The IV Cavalry Corps to join the Fifth Army Boundary between Second and Third Armies. approximate line Malmedy — Namur, between Third and Fourth Armies: line St. Vith Laroche — St. Hubert, all to the Fourth Army. The Fifth Army (less Group "Metz") to occupy the area Wiltz — Luxemburg — Trier. The advance guards of the three armies to reach the approximate line Namur — Marche — Bastogne — Luxemburg by 20 August. In rear of the armies of the right flank two second line corps of the Third Army and one corps each of the Fourth and Fifth Armies to remain temporarily at the disposal of GHQ In the event of a hostile attack the Fifth Army to retire in the direction of Wiltz — course of the Sauer. The Fifth Army to be reinforced by four Ersatz divisions, moving from the Rhineland by rail, in the area Trier — Saarburg. One of my staff officers to be assigned to each Army Headquarters tomorrow. Early on the morning of the 20th I will arrive at Headquarters Fourth Army.

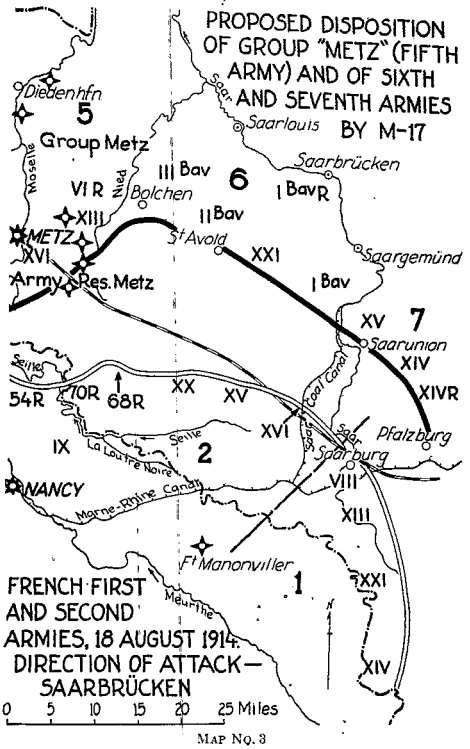


MAP NO 2

These changes would have effected a foundation for the great Battle of the Frontiers, which probably would have gone under way on 20 August along the entire front from Maubeuge, through Namur, Luxemburg, Metz to Saarburg. Judging by the terrain, the battle was certain of being reduced to a piecemeal proposition. The main effort in Lorraine as well as on the front between the Meuse and the Moselle would have been shifted to the western flank. The objective of the operation in Lorraine was the defeat of one-half the French forces by isolating and driving them into Alsace. Likewise the German forces of the right flank should have attacked the other half of the French armies that were invading Belgium and driven them along the Meuse into Lorraine and against the fortified line of the Moselle, Metz – Diedenhofen. With the change in the hostile situation the Belgian theater of operations west of the Meuse would then have lost its great strategic importance.

In marching on Maubeuge the right flank of the German armies should have attacked and defeated all French and British forces that were operating in the country west of the Meuse Eleven German corps would have sufficed to accomplish this, considering the hostile disposition then known to the German High Command.

The Chief of Staff should have gone to Saarbrücken on 17 August and remained there for at least a day or two, explaining his plan to the responsible



MAP NO. 3

commanders and assuring himself of a harmonious coordination between the three armies under the command of the Crown Prince of Bavaria. From 7 August on, officers from GHQ should have been sent to the front in order to supervise personally the disposition of the three armies.

Like the actual War operations of 1914, the two main battles of this proposed operation (in Lorraine and the Ardennes) probably would have taken place within a few days of each other. It was 18 August before the French Third, Fourth and Fifth Armies crossed the Belgian border. Under these conditions certain units might have been withdrawn from the fortified zone of Diedenhofen — Metz and employed against the eastern flank and in rear of the French armies that had invaded Belgium.

This proposed operation conforms to the principles of the war games conducted by Count Schlieffen on his staff rides of 1904 and 1905 From 20 August on, General von Moltke, accompanied by the Emperor and a small operations staff, should have established himself near the Fourth Army, for example at St Vith In the event of an early French attack in the direction of Luxemburg, the Fifth Army should have retired to the north and east until the turning movement of the Third and Fourth Armies had succeeded in a satisfactory advance of their lines.

3 March 1939

PORTRAYING THE MODERN GENERAL. WAR IN ITS REALITY AND THE GENERAL OF THE FUTURE.
{Das Bild des modernen Feldherrn Kriegswirklichkeit und Zukunftsfeldherr} {III} General Wetzell

{See digest, page 55; also "Military Review" No. 75, December 1939, page 95.)

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DELAYING ACTION.
{Vom hinhaltenden Widerstand.}

The defense which seeks a decision is carried out with the idea of involving the enemy in a bloody defeat, of crippling a portion of his army to such an extent that the bulk of our own force can advance from either its present or some other position. In order to accomplish this purpose the enemy must

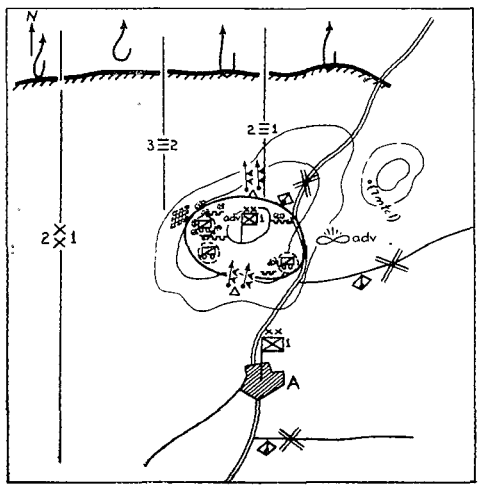
be enticed to resort to a heavy concentration of his force close to the scene of action, where he can then be subjected to a constant and accelerated annihilating fire of all weapons. This method of defense can be carried out in any terrain. Even though highly desirable, a deep field of fire and cover in rear of the main battle position are not absolutely necessary. In any event no position should be blocked by close-in defilade. The main line of resistance will often be determined on the spot, outlined along the position where the forward and rearward movements are taking place (beginning of trench warfare, 1914). The troops, especially the heavy machine guns, should be echeloned in depth.

Conducting a delaying action is to prevent a decision, to hold off the enemy, mainly with strong supporting fires. This requires a deep field of fire and covered means of exit. Lacking these, as a rule, we must conduct withdrawals under cover of darkness, if local catastrophes are to be avoided. The terrain should afford the advantage of observation, otherwise success is questionable from the very beginning. When the position is occupied the crest should be favored. It affords the advantage of observation as well as concealment. Dead angles just beyond the front should be avoided.

10 March 1939

STAFF SECURITY
(Schutz der Stäbe.) Lieut. Colonel Braun

DIVISION COMMAND POST SECURED AGAINST GROUND AND AERIAL ATTACKS



Hastily constructed road blocks with individual antitank guns or antitank machine guns.

Shallow trenches camouflaged and affording cover against artillery fire.

Two antiaircraft sections with observation and alarm personnel.

Tank mine or wire obstacle.

(7mk) Seven motorcyclists for security of the advanced landing field.

Horses and motor vehicles of the advanced command post separated and camouflaged.

(1) The division in open warfare is advancing its attack slowly towards the north. The objective has almost been reached. Enemy, with weak ground support but strong in the air, is covering his withdrawal to the rear with stubborn resistance. Terrain: normal level country. Time: early afternoon, summer.

(2) The right flank is exposed but secured by blockades and personnel from the intelligence detachments.

(3) A serious tank threat exists in the zone of the 3d Infantry, but only slight in the zones of the other two regiments and against the exposed flank.

(4) The advanced division command post is occupied by a limited staff (also called first echelon) with command cars and the most essential communications personnel and equipment (translator's note: in reality an advanced message center). The main division command post located in the village of A is occupied by the bulk of the staff (also called second echelon).

The garrison should consist of at least one company organized as follows:

(1) One antitank platoon (four 37-mm guns) equipped with an ample supply of mines and rolls of antitank obstacle wire.

(2) One motorcycle platoon with three light, modern, efficient machine guns, that can also be adapted to antiaircraft use; three antitank rifles or armor-piercing machine guns effective against scout cars. This platoon should be reinforced with one scout car patrol, as rapidly acquired intelligence secured during the hazy and indefinite conditions of combat is an important element of security.

(3) One engineer platoon mounted on light, hill-climbing, mobile, cargo trucks equipped with materials adaptable to the easy and hasty construction of obstacles, also equipment and materials for chemical defense against gas, both projected and wind-blown.

(4) One antiaircraft machine-gun platoon (four 20-mm guns), capable of being separated into sections. The advanced landing field personnel of the aviation liaison officer and the personnel at the station for dropping and picking up messages can be attached to this platoon, otherwise these men will have no idea who is to post them or where they should be posted.

Unfortunately the total comprising this company is a combined mass. To this must be added the impedimenta of this company -- everything that swarms in the path of the division commander. With a brigade, or division staff it is likely that the following may be dispensed with:

(1) The antitank platoon, replacing it by reinforcing the motorcycle platoon with two additional antitank rifles and several mines.

(2) The engineer platoon, replacing it by further reinforcement of the motorcycle platoon an engineer squad (on motorcycles).

The two reinforced platoons (motorcycle and antiaircraft), however, are inadequate for the security of staffs of higher units, including corps, as these staffs are subject to still greater vulnerability from the air because, inasmuch as their own troops must occupy an area more extensive than that in the division and brigade, these troops are less accessible from a standpoint of security. If this means of security is not assigned permanently to a higher staff, then it will be forced to acquire them by having them detailed from the troops, a circumstance that always has an adverse effect on their combat efficiency.

Clerks, horseholders and orderlies, due to the weapons with which they are armed, are of no great value in maintaining the local security of the staff.

The command of these security forces, especially on the march and during open warfare, is difficult. They cannot be employed to enhance the importance of the division commander, following him about dressed up in all their finery and splendor. They must be echeloned in rear of the limited staff, about one motorcycle squad with a pair of antitank rifles and a few rolls of wire. Within a half minute they can organize the first necessary protective measures, followed by additional reinforcements from other portions of the protective force. This applies to the main as well as to the advanced command post. Of important consideration is that the company be given an ample supply of radio equipment, especially of the portable type, in order to facilitate harmoniously the conduct of the advance.

17 March 1939

TRAINING OF THE RIFLE COMPANY SQUAD DURING DARKNESS
(Einiges über Ausbildung bei Dunkelheit während der Gruppenausbildung der Schützenkompanie.) Lieut. General Boltze

24 March 1939

COOPERATION BETWEEN HORSE AND MOTORIZED CAVALRY.
Über das Zusammenwirken berittener und motorisierter Kavallerie.) General von Poseck

Brigadier General H. S. Hawkins, a recognized American cavalry leader, is of the opinion that the combination of horse and mechanized cavalry may be used as follows:

"1. On reconnaissance and as security for large infantry units, the horse cavalry should march in front of the mechanized cavalry, excepting such armored cars and scout cars as can be used on or near roads. When hostile resistance is encountered by employing the combat cars on the flanks, or if there is insufficient room for the wide maneuver, the light tanks could precede and be followed by the horse units. This also is efficacious for attacks of cavalry in combination with infantry.

"2. During an attack against a hostile mechanized force in position by a cavalry force containing both horse and mechanized cavalry the action is developed as previously described. While the duel is taking place between the antitank guns, the horse units (separated from the combat cars and artillery) after the destruction of hostile tanks, will be employed against the enemy machine guns and riflemen and will then attempt to get in rear of or on the flank of the enemy and destroy his machine-gun and artillery units there, while the holding attack continues in front.

"3. In fighting a delaying action, the horse cavalry selects ground unsuitable for mechanized cavalry, ground in which the hostile mechanized cavalry is obliged to fight by fire at long range. Roads leading to the rear are used by the mechanized cavalry while the horse cavalry operates across country, a combination that should prove very effective.

"4. In defensive combat the mechanized cavalry backs up the horse cavalry as a reserve prepared to counterattack. In these combinations both portions must remain always in supporting distance of each other, otherwise the great advantage of the combination is lost.

"5. Also in the pursuit, as well as in all cavalry operations, mechanized cavalry can render much more important service in combination with horse cavalry, than if it were operating alone.

"The difference in speed, especially on good roads, is a source of trouble. There will always be the temptation to send the mechanized cavalry far ahead, where often it will become involved in real trouble before the arrival of the horse cavalry."

The foregoing indicates that in America there is a wide circle which is convinced that the combination of horse and mechanized cavalry offers possibilities, especially in its tactical employment.

It appears as though France also favors this attitude, for the cavalry corps consists of horse cavalry, light mechanized (road combat cars and tanks) and motorized (dragons portés and motorcyclists) cavalry divisions. The instructions for the tactical employment of large units provides for the combined employment of horse and mechanized units.

Italy likewise shows no intention of doing without her cavalry and assumes along with the bargain the difficulties entailed in the control of the reinforced mobile divisions.

In England, except for the colonies and Palestine, the cavalry has been thoroughly mechanized. The Cavalry Training discourages the combined employment of cavalry and tanks. In the attack combat cars should either be employed independently or in combination with other weapons against the rear and the flanks. Despite this there are many in England who favor a combined operation.

In Russia, the terrain, roads and bridges favor the retention of large cavalry units.

In reconnaissance operations the advantages and effects of each must be recognized. The motorized units have an operative effect; the horse cavalry units, when employed tactically for close-in reconnaissance, have an incontestable value. This also applies to the large units.

It would be a mistake not to exploit the great speed of motorized army units during operations and sacrifice speed out of regard for slower moving troops. But these rapidly moving forces are not constituted for reconnoitering about a broad no man's land unseen. Moreover, the initial contact with the similarly rapidly moving hostile force will take place within a very short period of time. It is then that the proper tactical operation must be resorted to, the tactical combination of the horse and mechanized cavalry will then become significant.

1 April 1939

PRESENT-DAY STAFF EQUIPMENT.
[Ausstattung neuzeitlicher Stabe.] Dr. Wm Brandt

The command of a mechanized division without division aviation is fraught with great difficulties and delays. Many a high commander in the future is sure frequently to take advantage of the opportunity to observe his and the hostile command from the air. At least one general staff officer of the division should be in the air. Autogiros or other slower planes like the "Fiesl Storch" appear to be particularly adapted for this purpose. A portion of the division staff should be given high mobility in armored command cars. These command cars enable the division commander, or his staff officers, to observe operations far to the front. Radio communication with the rear echelon is indispensable to the forward as well as the rear elements. These rear elements might well be provided with vehicles outfitted as living quarters.

The supply of weapons should parallel the strength of the division staff. A great number of bicycles is necessary to all staffs of mechanized units. Following halts and dismounting the staffs of mechanized units are tied to the ground. Bicycles will solve this problem and can easily accompany the trucks.

7 April 1939

MARCHING CROSS-COUNTRY AND BY NIGHT.
[Marsch querfeld und bei Nacht.] Lieut Colonel Braun

It is a fact that war, the great teacher, gave us the cross-country march, but to a great extent, unfortunately, this experience is forgotten. The performance and schooling in this phase of training are disagreeable and fatiguing, perhaps also somewhat tedious. The goal is not to be attained through headlong and rash approach. The good German roads are too enticing and one is so comfortable riding in trucks with good springs. The method of issuing orders and the formations are partially new. Usually cross-country marching should follow orders issued by leaders mounted on horseback, and should involve patrolling and distant objectives. Practice in the approach march is not much help.

It is the old story: one hesitates to tread on strange earth. Further reasons are the equipment of the troops which, despite much progress towards decreasing its weight and effecting freedom of movement, still continues to be cumbersome. This is particularly noticeable in transportation, whether animal or motorized. For example, there is the new "Brontosaurus" combat car of the infantry with its splendid balloon tires, fabulous compartment space and exquisite inner decoration; still it is but little suited for long cross-country driving. Two Anatolian buffalo carts would be preferable, they could keep pace with the infantry. An important requisite of the cross-country march, one that hostile aircraft will force upon us in a future war, is that the baggage must be light and flexible.

In the wars of the future, as everyone may see, there will be more marching by night than by day. Here again it is discomfort that places its limitations on this phase of training. Many believe that once a month will suffice, and even then there is nothing stressed except the march itself. But the night program of the war of the future will be more complex. A regiment will march at night and, while it is still dark, will enter its billets. Then, after scarcely being settled down, it will be subjected to bombing by hostile aviation. Lights must be extinguished, civil population sheltered, active and passive antiaircraft defense established, wounded provided for, and perhaps new billets or bivouacs selected while the force, scattered by the aerial attack, is being reorganized. Nightfall may also bring a surprise attack by parachute – numerous bedevilment from the air will be possible in the war of the future. We must also think of chemical attacks from the air. There will be loading of cargo trucks and railway cars, shifting of positions involving cross-country marching, reliefs of a defensive position, a night march of a column of infantry tanks, night marches by compass and landmarks ignited by the incendiary action of friendly artillery, and many other varities.

14 April 1939

CONCERNING THE CULMINATION OF THE ATTACK.
[Uber den "Erschapfungspunkt des Angriffs."] Lieut General Marx

It is the difficult task of the commander to recognize opportunely the time when the force of the attack has reached its culmination and then to effect a pause, during which time – it being impossible to bring replacements forward – at least some advantage can be gained through contact with the rear elements. To be sure this task involves a difficult art; the requirements have seldom been met properly. There are numerous occasions when it was proper for the higher command to order a continuation of the advance – the case of Prince Frederick Carl at Le Mons — and we are aware of numerous occasions when the higher command only achieved what is commonly referred to as "kidding the troops." A close sympathy between the higher staffs and the troops is necessary. That was apparent to all in the case of Mackensen's Army in 1915, when pauses were effected repeatedly, for the purpose of bringing up ammunition and supplies without thereby permitting the conduct of the attack to be neglected.

The value of supply cannot be stressed too highly. For example, in tactical exercises a battalion of artillery is represented as a red or blue worm 1,000 yards long, crawling uninterrupted and unbroken across entire sections of a 1.100,000 map. But under actual conditions such a battalion (not to mention the infantry) is a worm trailing a thread that must neither be too extended nor cut off. That cannot be repeated too often during maneuvers or logistical exercises and during all similar opportunities. The historian takes for granted that one must prepare coffee, cook meals, eat and drink, but it would be very pleasant indeed if one might read about it occasionally. Questions might be asked, such as, "When did your battalion eat? When were the horses watered and fed? How did your field kitchens procure their meat, vegetables and coffee? Where will they be located at 6:30 PM?" Military publications should contain supply problems and articles pertinent thereto. Without the uninterrupted supply of fuel (in the broad sense of the word) pumped through the thread trailing rearward, there will be no red or blue worm crawling across a section of the 1.100,000 map — instead there will be the well-known point known as the culmination of the attack.

21 April 1939

ANTITANK ARTILLERY AND PURSUIT TANKS.
[Panzerabwehr-Artillerie und Panzerjäger.]

The attitudes of various powers towards the importance of antitank defense has been responsible for a general tendency towards specialization. The tactical employment of antitank artillery has given rise to a new conception. Recognized for a long time, but until now mainly a dream of desire, this conception has found new life in the pursuit tank. But of prime consideration everywhere is the desire to have a light antitank cannon for the infantry and other combatant arms of the service.

The employment of antitank cannons of 37-mm to 50-mm caliber does not seem to be entirely satisfactory. Range and fire effect have been remarkable, but these weapons are only capable of playing an insignificant role in the direct support of the infantry. They are too heavy, too difficult to transport and are too conspicuous. Only on rare occasions, therefore, would they be employed as forward positions. Moreover, they are compelled to be held out in order that they will not be observed and destroyed before the tank units get into action. If its most favorable ranges are to be utilized, it will also be impracticable to employ it before the front lines. It can be understood, therefore, why it is desirable to give the infantry a new, lighter weapon with which it can defend independently the positions in front of the main line of resistance.

In any event the development must be directed towards an antitank cannon between 40-mm and 50-mm caliber, mounted on a self-propelled carriage, and having the same capacities for engaging targets as the present dismounted gun. The employment of combat-cars for this purpose is without a doubt only an emergency makeshift, if no actual antitank counterattack is planned. At least it would be unwise to burden the pursuit tank with the weight of armor plate of usual thickness. A saving in weight would afford the advantage of carrying extra ammunition. It is apparent that the increased mobility of such a pursuit tank would enable it to find cover more easily and so carry out its peculiar mission intact. Its principal advantage, due to its similar qualifications, lies in its ability to select positions closer to the enemy without being placed in the hazardous position of the dismounted gun, subject to immobility and destruction.

In the case of the antitank artillery the objective appears to be a new weapon of at least 50-mm caliber, resembling in other respects the present antitank cannons. Its mission will be such that it can lay down fires from the depths of the infantry zone and from positions in front of artillery emplacements. This weapon will permit of the individual immobility of the weapon itself, without its being unnecessarily subjected thereby to premature destruction. This weapon will also eliminate to a great extent the present tank threat imminent to artillery. It has been accepted generally that the artillery, in the event of a tank threat, can take care of itself quite adequately. Of course a certain amount of emergency defense is possible, even though great difficulties are presented by the limitations of traverse, the time required in laying and entrenched emplacements.

Of far greater importance is an attack by tanks in great mass against the artillery positions, affecting automatically the fireplan of artillery fire being laid down in entire sectors forward of the main line of resistance. In

such an event the fact that a single gun in each battery has been assigned the mission of antitank defense is of no help. The combined guns of the whole battery, or even the entire battalion, will have their hands full attempting to engage in such a duel successfully. The greatest significance at this moment is that all counterbattery operations and artillery fire against the hostile infantry is terminated. If such a possibility becomes a reality, then much can be said for the success of the employment of tanks.

The above mentioned triple allocation will be carried out so that the infantry, and other arms likewise, will be equipped with a half, or fully automatic antitank cannon in order to be able to defend itself adequately against tanks. The pursuit tank unit, on the other hand, will be available to the troop commander as a means of defense in threatened sectors, as far forward as possible, and for destroying heavy combat cars in front of the main line of resistance. The individual infantry regiment will probably control its own unit of similar weapons. It is the common mission of both weapons to prevent hostile tank penetration.

The antitank artillery must be assigned the mission of the defense of the artillery, reserves, command posts, staffs, lines of communication, etc., principally to prevent hostile tank penetration. It would appear as though this weapon should belong organically to a special detachment of the artillery, but above all should be available to the troop commander.

28 April 1939

QUESTIONS CONCERNING MAPS
Zur Kartenfrage | Lieut General Marx

Every lieutenant and candidate for commission, if his career is not interrupted, eventually must make use of a map in combat. Until such time he must, therefore, become as proficient as possible in map-reading, he can never get enough training in this subject.

During open warfare the lieutenant, executive of adjutants, the noncommissioned officer and the private had no maps. It was only after the beginning of trench warfare that it became possible to issue them at least to all officers, most enlisted men still had none. It became necessary, therefore, for all lieutenants, noncommissioned officers and those enlisted men who were employed during the war as mounted messengers to get along without maps. They can do that much better if they become familiar with maps during peacetime. For it is an undisputed fact that those who must ride or drive without maps, after they have memorized the map or copied a small sketch, must first have learned to read maps. The more he has been trained in map-reading, the better will he be able to ride without maps.

Practical exercises can be given on the 1 100,000 map. The pupils are required to memorize every critical landmark between two points. Then one of them is required to describe the route without the map, the other pupils following the route on the map.

On the march, noncommissioned officers and officer candidates can be called to the head of the column. Outside of a village they can be given time to memorize the map, then one of them is required to guide the column through the village without a map. Occasionally they may be required to make use of the map in guiding.

Every opportunity should be taken to instruct in riding with and without maps. Certain exercises, such as those concerning artillery and similar patrols, observation patrols, an artillery liaison officer observing from a definite observation post, are impossible without maps. In reporting on situations the number of maps available should be indicated as well as the condition of troops, the ammunition situation, etc.

A few words might be mentioned in favor of the 1 50,000 map that is now being used as a matter of experiment in the training problems. This map might be the means of reconciling the advantages and disadvantages of the 1 100,000 maps and the 1 25,000 maps. The German 1 100,000 is an extraordinary map, it presents a clear picture of ground forms and contains sufficient detail to be used as a guide in passing through villages, etc. In this respect it is preferable to the French 1 80,000, but can neither stimulate nor represents the imagination. For purposes of accurate fire control it was of course less adaptable, as a church or a highway had to be represented by a sign almost 100 meters in width. Here the 1 25,000 was a help. It gives a wonderfully clear picture of ground forms and its abundance of contour lines enable the reader to determine all elevations with accuracy. The 1 50,000 map does not present as clear a picture, but it has the advantage in that more maps can be carried. Still I cannot recommend the abandonment of the 1 100,000 maps. They are required by the higher command and the general staff. The question is whether we should prefer the 1 25,000 to the 1 50,000, even though it requires more space.

5 May 1939

INFANTRY MARKSMANSHIP TRAINING IN THE ARTILLERY
Die infanteristische Schiessausbildung bei der Artillerie.

At present there exists a need for equipping artillerymen with rifles, because:

1 The lightest as well as the heaviest field batteries are subject to attack by troops dropped in parachutes.

2 Fast, mobile, motorized, hostile forces are a constant threat to the flanks and the rear of artillery positions.

3 Like all other combatant arms the artillery must provide for its own defense against hostile aircraft.

The very fact that every artillery recruit is required to undergo firing practice in three marksmanship positions, makes marksmanship training during peacetime a necessary phase of artillery recruit instruction. Unfortunately the artillery cannot devote as much time to rifle marksmanship as the infantry. The question is, how much should it adopt and, having adopted it, how should it be accomplished?

The artilleryman is required to undergo instruction in rifle marksmanship covering three positions, namely:

(1) Prone with rifle rest. (2) Prone without rifle rest. (3) Off hand, standing.

Now, if this training of the artilleryman is prefaced with the words, "Limitations disclose the master," then we have grasped the substance of the training. The following points should be considered:

1) The foundation of all rifle shooting consists of a faultless position, with the small of the stock grasped properly, correct squeezing of the trigger, a fine technique in holding the breath and "sweating it out" quietly.

2) Only the three position exercises, which the recruit can make use of during actual firing in the three positions, should be practiced.

3) Making triangles, aiming practice with the rifle rest and firing exercises with blank cartridges are just as important in the training of the artillery recruit as they are for the infantryman.

4) Small caliber practice is perhaps of greater significance to the artilleryman than to the infantryman, as this range is in barracks and therefore saves much time which would otherwise be devoted to marching to and from the outdoor range. Shooting is a matter of practice, and the necessary practice can be acquired by the artilleryman in this way.

5) If the artilleryman fires only his three positions, then he has fired but nine rounds. This is insufficient for him to establish confidence in his weapon. Each exercise should be preceded by preliminary firing under the same conditions as those which are to be followed during subsequent firing practices.

6) Marksmanship exercises are necessary to relax the joints and strengthen the arms and finger muscles. These can be accomplished by using five minutes time every day during drill periods.

7) It is a common fact that training in rifle marksmanship, like all other unit training, is dependent on the degree of training perfection of the noncommissioned officers. That this at present is not what it should be is well known. This condition is certainly aggravated in the case of the artillery noncommissioned officer who is required to assume the role of an infantry instructor in rifle marksmanship in addition to his pursuits in the knowledge of theoretical and practical artillery. This is where the battery commander must apply himself. His battery should contain at least one lieutenant, who as a sergeant received his marksmanship training in the 100,000-men army, and who can be utilized as an instructor for developing the noncommissioned officers into rifle marksmanship instructors. If the battery commander divides his noncommissioned officers into four groups and assigns himself, the lieutenant, the most experienced sergeant and the sergeant instructor in marksmanship as instructors, a great deal can be accomplished in an hours time. If the time between the fall discharges and the enlistment of recruits is utilized, if one hour a week is devoted to instructing noncommissioned officers in rifle marksmanship, if every noncommissioned officer fires every exercise concurrently with the recruits, if the battery commander provides special training for his subordinates, then every front line noncommissioned officer will have acquired before the winter is half over the ground work necessary for an instructor in rifle marksmanship, a basis upon which improvement can be made during subsequent years.

TRAINING OF THE ANTITANK COMPANY
Die Ausbildung der Panzerabwehrkompanie | Captain Reuter

In the duel between the tank and the opposing troops there is to be considered but one rule of fire, and that is the fastest that may possibly be conceived, one that is the result of preparation of the field of fire, that considers the tank from the point of distance and visibility and allows but one adjustment of fire — that which effects the total destruction of the opposing tanks.

12 May 1939

DO THE WORLD WAR 1914-1918 EXPERIENCES OF GERMAN FLIERS STILL HAVE A PRACTICAL APPLICATION TO THE PRESENT-DAY COMMAND?
Können die im Weltkrieg 1914-1918 von den deutschen Fliegern gesammelten Erfahrungen auch heute noch der Führung von Nutzen sein? Lieut Colonel v. Lowenstern

German aircraft in use in 1918

(1. Bombers. Giant aircraft: four motors, 260 H P., 87 m p h., duration 7 to 10 hours, ceiling 18,000 feet, seating capacity 7 men, bombing load 2,640 pounds.

A E G. German General Electric G IV: two motors, 260 H P. Mercedes, 102 m p h., duration 4½ hours, ceiling 14,760 to 16,400 feet, seating capacity 3 men, bombing load, 2,200 to 2,640 pounds.

Gotha G V: two motors, 260 H P., 87 m p h., duration 5 hours, ceiling 18,000 feet, bombing load 2,200 pound.

2 Reconnaissance planes. Rumpler C VII: 112 m.p.h., duration 5 to 6 hours, ceiling 2,300 feet, seating capacity 2 men, 2 machine guns; considered the best reconnaissance plane of the World War.

3 Pursuit planes. Fokker D VII: About 125 m p h., ceiling about 2,300 feet; in 25 minutes it could attain an altitude of about 20,000 feet.

Missions, objectives and allocation of flying units

1 Fighting units: bombardment squadrons — To attack the principal commercial and nerve centers of the enemy: industry, mines, power plants), harbor entrances, supply bases; annihilation of the hostile air force. Employment in combat in order to force a decision on the ground — to attack avia-

tion units, command posts, all types of distributing points, camps, billets, bivouacs, etc

The bombardment squadrons (fighting units) were assigned to G.H.Q. They were employed to operate with the armies making the main effort. During pauses in combat they were attached to individual armies to engage targets previously selected by G.H.Q.

(2) Observation squadrons. Distant observation was performed by army and G.H.Q. aviation. The extent of the observation missions was coordinated jointly by the army groups. Simultaneously the army high command designated definite boundaries for limiting the lanes of observation. These steps secured the various units against duplication of effort.

Corps aviation was assigned observation missions within the corps. Combat reconnaissance missions were assigned to squadrons comprising the division aviation.

Battle squadrons, formed in groups, were required to cooperate with the army in both aerial and ground combat to the extent of their technical limitations. Pursuit planes, as part of a squadron, group or flight unit were alone responsible for maintaining supremacy in the air by attempting the destruction of hostile aviation or rendering assistance to friendly planes returning to their base. These missions are quite similar to present-day requirements.

In contrast to the simpler missions of today, these proportionately difficult missions had to be and were solved. Then there were no German efficient daytime bombers or destroyers, no units of diving fighters, at that time a portion of these missions fell to the lot of the battle planes and the bombing squadrons.

If, at present, the World War accomplishments of aviation are receiving less and less consideration, it is because up to now too little is known in general of the vast amount of valuable material which that period produced. In addition to its employment as an offensive weapon, the airplane has become a means of transport communication between continents. Just how the employment of aircraft as a hostile counteroffensive weapon will develop, is still a matter of theory. It seems, however, that many experiences, especially those of 1917-1918, might be considered of valuable reference. Of practical importance is the immense significance of the employment of aircraft in the direct support of the other two main arms of the service even at the outbreak of hostilities and especially during the struggle for the final decision. In the accomplishment of these missions the experiences of the World War still have a useful application, as the airplane is still confronted with the same missions. Technical improvements have increased its efficiency and made accessible objectives heretofore unattainable, even though they have complicated the manner of accomplishment. A reflection upon the complexity of occurrences in the World War, a reconsideration of the experiences of those times will assist the high command in the construction, development and employment of the air weapon and will serve its crew as a practical index in the accomplishment of its missions.

19 May 1939

POLAND AND HER ARMY
(Polen und seine Wehrmacht.) Major General Zoiss

This article covers the organization of the Polish Army, the ethnological composition of the country's population, the transition of development from Pilsudski to Rydz-Smigly, the natural resources, the industrial development, waterways, railways and geographical description at a time which was but four months prior to the German invasion.

THE TACTICAL EMPLOYMENT OF THE MORTAR PLATOON OF THE MACHINE-GUN COMPANY OF THE INFANTRY REGIMENT (MOTORIZED)
(Der taktische Einsatz des Granatwerferzuges der MG.-Kompanie eines Schutzenregiments (mot.).) Captain v. Usedom

26 May 1939

THE SWEDISH FALL MANEUVER, 1938
(Die schwedischen Herbstmanover 1938.)

This article with five maps presents a complete outline and critique of the Swedish maneuver from 16 to 21 September 1938.

The maneuver involved 24,500 men, 3,000 horses and 1,000 motor vehicles. Portions of the First, Second and Third Divisions and of the air force participated. The coast artillery cooperated jointly.

SCHOOLING AND TRAINING IN COMBAT FIRING
(Schulgefechtsschiessen und Gefechtsschiessen.)

MILITARY ENGINEER

November-December 1939

THE COAST AND GEODETIC SURVEY — ITS PART IN THE NATIONAL DEFENSE Rear Admiral Colbert

THE CORPS IN THE DAYS OF THE REVOLUTION Major Heavey

HISTORIC PANAMA. Kirkpatrick

MILITARY LESSONS FROM THE CHINESE-JAPANESE WAR (I) Captain Smith

January-February 1940

LOCAL CONDITIONS IN FINLAND AND THEIR INFLUENCE ON WARFARE. Colonel Zilliacus, Military Attaché at the Legation of Finland

GERMANY AND THE DEFENSES OF THE LOWLANDS. H. M. Cole

THE CAMPAIGN IN POLAND, SEPTEMBER 1939. Lieut. Colonel deWatteville, British Army

STRATEGIC MINERAL SUPPLIES IN THE U.S.S.R. (RUSSIA) Major Roush

THE UNITED STATES AND LATIN AMERICA. Lieut. Colonel Willoughby

MILITARY LESSONS FROM THE CHINESE-JAPANESE WAR. (II) Captain Smith

MILITARY SURGEON

December 1939

THE TROPICAL DISEASES FROM THE STANDPOINT OF THE MEDICAL OFFICER OF THE UNITED STATES ARMY Lieut. Colonel Carballeria

January 1940

THE MEDICAL SERVICE WITH THE STREAM-LINED DIVISION Colonel Darby, and Captain Zuver

THE NEW REGIMENTAL MEDICAL DETACHMENT Lieut. Colonel Williams

February 1940

HOSPITAL PLANNING AND ADMINISTRATION IN MILITARY HOSPITALS. Lieut. Colonel Lehman

SYPHILIS, ITS SIGNIFICANCE, IMPORTANCE AND CONTROL IN THE MILITARY. Major Marsh

NAVAL INSTITUTE PROCEEDINGS

November 1939

THE LAST OF THE U-BOAT RAIDERS. Lieut. Commander Rucker

A CHAPTER FROM GENESIS OF THE WAR OF 1812. Commander Dunn

December 1939

THE FIRST LINE STRENGTHENS PAN-AMERICAN POLICY Commander Lovette

NAPOLEON'S FIRST DEFEAT Robert W. Daly

January 1940

THE EFFECTS OF METEOROLOGICAL CONDITIONS ON TACTICAL OPERATIONS AT JUTLAND Lieut. Commander True

MERCHANT MARINE TRAINING. Ensign Bisbee

AN ORGANIZATION FOR THE NAVY DEPARTMENT Rear Admiral Taussig

CONSOLIDATION OF THE LIGHTHOUSE SERVICE WITH THE COAST GUARD. Robert H. Macy

GUAM — OUR WESTERN OUTPOST Lieut. Commander Nelson

February 1940

A RÉSUMÉ OF NATIONAL INTERESTS IN THE CARIBBEAN AREA Lieut. Commander Olch

THE MERCHANT OFFICER'S PLACE IN THE NAVAL WORLD. Ensign Fitz-Gerald, Retired

THE SAGA OF A MODERN SEA RAIDER Lieut. Commander Brown

DIE PANZERTRUPPE (Germany)

By MAJOR WM. H. SPEIDEL, Infantry

August 1939

COMBAT METHOD OF RIFLE UNITS IN THE ATTACK WHEN COMBINED WITH TANKS
(Über das Gefechtsverfahren der in Verbindung mit Panzerkampfwagen angreifenden Schutzeneinheiten.) Major v. Manteuffel

It frequently happens that maneuvering results in a surprise attack. Consequently, it is important that the vehicles should adopt a formation with greater distances and intervals, especially in open country, just as soon as they begin to encounter hostile resistance. Otherwise all the advanced elements will be subjected simultaneously to the effects of the hostile resistance. The combat formations must take these conditions of battle into consideration.

When action becomes imminent, the leaders of the rifle units should ride forward to a position where each can select the most advantageous ground for his unit (platoon, company, etc.) and make a personal and early reconnaissance of the predetermined battle position. This is much better than depending on the best reports arising from other sources of information.

The personal influence of the leaders should be continued even after the units have been assigned definite objectives in order that they may be in a position to make quick decisions, during the ever-changing situations of battle, relative to the assignment of new objectives. Peculiar to this method of combat are prompt and concise orders suitable to the rapid mobility of such units.

Of great importance is the steady employment of auxiliaries, such as the heavy weapons. Their support of the rifle units during the rapidly changing situations of tank combat will be effective only if they continue to follow these units and have been trained to exploit the result of their observations with fire. Although it is customary for the battalion commander to have a definite plan of fire for all units during the early stages of the attack, this procedure cannot always be carefully adhered to when the troops are directly supported by tanks. Fires of all weapons should not be controlled by sched-

ule, because the period of halting and the moment of resumption of the forward movement depend on the will of the advanced elements and that of their subordinate leaders. Theoretically the movements of troops should be carried out according to predetermined plans, in order that they may be given adequate fire protection and so prevent the danger of their being routed by hostile fire. The movement should not be overestimated; the hostile fire (non-existent in peacetime) should not be underestimated. The supporting fires are coordinated initially. Their control, as the action develops, is subject to the will of the commander. He develops a plan of fire that must be changed frequently and enlarged upon not only after the first objective has been reached, but every time he becomes aware of a change in the hostile situation.

If one assumes that the tank units will seldom have the opportunity to reduce completely all hostile infantry resistance within their own zone of attack (such action would necessitate undue delay), it devolves upon the succeeding rifle troops to destroy the enemy, who meanwhile has been temporarily checked, with the greatest possible volume of fire power. If he rallies he must be subjected immediately to heavy fire and kept under its effect. Hostile troops who still remain effective should be subjected to concentrated fire in order to deny them the use of their weapons and to prevent their rallying after the tanks have passed on to the next wave. It is then that the principal mission of the rifle troops — the destruction of the enemy — must be accomplished by assaulting him with all available fire power. In addition, short periods of combat may be devoted to the neutralization of the hostile infantry defense. Because it is known from experience that the spearheads of the attack, in their elimination of each individual local resistance, cannot always depend upon the direct support of the artillery and the heavy weapons, the rifle squads should be equipped with two light machine guns each. Inasmuch as the squad in its present strength must be assigned two vehicles, and the transportation which is occupied by the rifle troops is not completely loaded, there is space available for an additional light machine gun. It is not considered advisable that the decision to employ these troops either as rifle or light machine-gun troops should remain a matter of choice. The second light machine gun should immediately accompany them into combat along with the equipment necessary for its operation. It follows that the effect of the rifle troops with the extra equipment at the next phase will be greater than that of the assault with rifle butts, spades, daggers or knives. In the squad a few individuals should be assigned to two machine guns with plenty of ammunition, and a few should be equipped with automatic pistols and plenty of hand grenades.

In order to prevent the enemy from taking cover, provided he has not been destroyed completely by the tank attack, and thus neutralizing the effect of our machine-gun fire, the rifle units should be equipped with plenty of high-angle weapons including plenty of ammunition.

The rifle troops combine firepower with movement. Every movement serves to render the firepower more effective. A French article emphasizes this as follows: "The movement that can break the hostile resistance always carries the firepower closer to the enemy. This is exploitation of fire superiority applied by the one who succeeded in gaining it."

During the entry into, and the exploitation of, combat, the transition from the deployed advance on trucks to the attack must be rapid, because every delay presents to the undefeated portions of the enemy the opportunity to recover from the demoralizing effect of the tank attack. He will then find time and opportunity in which to prepare his defensive fire. The more troops trained in this respect, the greater will be the reduction in this factor of time. Trifling losses must not result in premature dismounting, a step which would have a tremendously adverse effect on the action as a whole. The forward movement of the flanks alone is often sufficient to cause the opponent to slacken his resistance, and thus greatly assist the advance of our own troops. The effect of the tank attack must be exploited rapidly and decisively by the supporting fires of the deployed troops and the heavy weapons in the most expeditious manner until the area in which the tanks have gained superiority has been mopped up. This supporting fire is only possible when closely coordinated with that of the advanced elements. The rearward heavy weapons, especially those in defiladed positions, must be ordered forward as soon as possible. During the early stages their leaders belong well forward where they can exercise more effective control, where the platoon and company commanders can keep up with the situation and effect the coordination of firepower and striking power. They must continue to maintain a close check on their units — machine-gun sections, mortar squads, individual infantry troops and antitank guns, in order to shift their fires to new targets as the rapidly changing situation develops. An accurate observation of the effect of fire and the independence of subordinate leaders must replace the delay involved by visits to the firing positions. It is believed that in this phase of the attack there will develop a number of local assaults because, while the opponent might be stopped at one place, he will commence to rally elsewhere; on the flanks there will crop up resistance that either has remained unnoticed or has been combatted against ineffectively. This is no cause for considering that the attack or the fire is becoming disorganized or disconcerted.

By issuing combat orders direct to the assault companies and by constant observation and control of fire, the battalion commander from a position well forward continues to maintain his influence. A flexible control and application of the fire of the heavy weapons is necessary. The aim of the attack is to strike the enemy with the combined firepower of all weapons at decreasingly closer ranges, using the most effective means available, for such firepower results in effective striking power during the next phase of the attack. Inasmuch as the fire of attacking infantry is rendered most effectively by the combination of high and low angle fire, it is necessary that the battalion commander provide for a systematic organization of fires either by the assignment of definite tasks to the heavy weapons or by appropriate instructions to the assault companies. The first consists of zones of observation and fire assigned to the heavy weapons by the battalion commander, his appropriate time and place employment of these weapons at the beginning of the attack and assignment of fire and observation missions through fragmentary orders during the progress of the attack. He must also give thought to the selection of the next position in order that the protecting fires of the infantry can keep up with the attack. It frequently happens that the heavy weapons must be split up or, after being dismantled, set up again at some distant point. They should be permitted to follow the assault units as soon as possible in order that they may occupy positions as far forward as possible in sufficient time to engage targets of opportunity, often of decisive importance, and especially to be able to cover quickly with a mass of fire the more difficult targets, thus avoiding the necessity of transmitting long-distance fire orders, a process which, in addition to other hazards, introduces a source of error into the conception of the objective. The battalion commander will hold out a portion of his heavy weapons as a mobile reserve of firepower in order to engage targets in the rear area. In this respect great importance should be attached to the light and heavy infantry cannons (in addition to attached artillery and portions of the machine-gun company) which, on account of their greater size and weight, cannot be placed so far forward. For example, the mortars, on account of their trajectory and mobility are especially fitted for complementing the fires in the forward areas and lending effective support by covering defiladed and more or less impenetrable areas, and are therefore used more frequently in this respect. Often the terrain and the large number of hostile groups encountered will demand the employment of machine-gun sections and individual mortars, to which demand there should be no objection. If one adheres too strictly towards maintaining the integrity of the unit, these weapons, due to unfavorable terrain and the absence of a field of fire, during important stages will remain ineffective or else arrive too late to be of any value. The use of common sense will guarantee success.

ARMY REGULATIONS
[Aus dem Heeres-Verordnungsblatt.]

Effective 19 September 1939 the mechanized forces and the cavalry were incorporated in a single unit known as "Schnelle Truppen" (Mobile troops).

The Schnelle Truppen include:

(1) Panzer (mechanized) regiments. (2) Antitank detachments. (3) Motorized rifle regiments. (4) Motorcycle rifle battalions (5) Mounted and cavalry regiments. (6) Bicycle detachments. (7) Motorized reconnaissance detachments.

All units of mounted and cavalry regiments, as well as the bicycle detachment, will be given the designation "Schwadron" (troop). Officers of these units of the rank of captain will be designated as "Rittmeister" (captain of cavalry). All other units will be given the designation "company," their officers in the rank of captain will be designated as "captains."

September 1939

COMPARISON OF THE FUNDAMENTAL STRATEGICAL AND TACTICAL DOCTRINES CONCERNING THE EMPLOYMENT OF, AND THE DEFENSE AGAINST, MECHANIZED UNITS IN THE FRENCH, BRITISH AND RUSSIAN ARMIES.
[Vergleich der grundsätzlichen operativen und taktischen Auffassungen über Einsatz und Abwehr von Panzerverbänden in den Heeren Frankreichs, Englands und Russlands.] Captain Sauvant

France has developed her former cavalry division into the "division légère mécanique," consisting of approximately 100 scout cars, 4 motorized battalions (dragons portés), 70 combat cars, 9 batteries and other auxiliary arms. The battle mission of all types of combat cars is to accompany the infantry in combat in order to facilitate close cooperation in the destruction of all hostile automatic weapons. They are attached to the infantry in order to form reinforced battalions. They either fight between successive infantry waves or else precede the infantry attack. When used as accompanying combat cars they are employed as a maneuvering force, advancing on terrain which would favor the situation.

They are also employed in cooperation with artillery. The French organize their artillery in groups: (1) Groups that support the infantry or the combat cars, and are assigned joint missions with them; (2) Counterbattery groups. (3) Groups that employ harassing fire.

England, along with the acquirement of new mechanized equipment, has reorganized the entire system of mechanization. Tanks belong to independent, mechanized units. The British tank company contains a mixture of light, medium and cannon tanks. The tank attack is not dependent on artillery support. It penetrates deeply into the hostile positions. It is characterized by its independence of action. It is planned, however, to organize some G.H.Q. tank units, that will be employed on missions in cooperation with infantry.

Russia employs the tanks as a supporting arm of the infantry.

THE EXTENT AND ORGANIZATION OF THE MECHANIZED FORCES IN THE SOVIET UNION.
[Umfang und Gliederung der Panzertruppen der Sowjetunion.]
(See page 15, C. & G. S. S. Military Review, December 1939.)

STANDARDIZATION OF ARMY MOTOR VEHICLES, REPLACEMENT OF SUPPLIES AND INTERCHANGING OF PARTS.
[Vereinheitlichung, Ersatzteilhaltung und Austauschbau bei Heereskraftfahrzeugen.] Major Bernhardt

MOTOR VEHICLE ACCIDENTS AS CAUSED BY THE FAULT OF THE DRIVER.
[Der Ursprung der Kraftfahrunfalle durch eigenes Verschulden des Kraftfahrers] F C. Roth, Government Advisor on Construction

October 1939

THE POLISH CAMPAIGN, A PAGE OF GLORY FOR THE MECHANIZED TROOPS
[Der polnische feldzug ein Ruhmesblatt fur die Panzertruppe.] Lieutenant v.Cochenhausen

The article contains an introduction by v Schell and gives brief accounts of the following: (1) Motorcycle troops in the advance guard (2) A lieutenant captures 400 prisoners (3) The tank as pioneer, scouting agent and tractor. (4) Tanks assist the infantry (5) An antitank gunner is awarded the first iron cross in his division. (6) Tank surprise attacks. (7) Annihilation of a battalion by a few tanks. (8) A tank officer captures a pillbox singlehanded. (9) Tanks mop up

HOW MOTORIZED UNITS, ESPECIALLY MOTOR COLUMNS, SHOULD KEEP THEIR WAR DIARIES.
[Zur fuhrung der kriegstagebucher durch mot. Einheiten, insbesondere kraftwagenkolonnen] W Paschasius

The article contains four printed forms which form the basis for discussing a system of recording historical data and noteworthy events.

THE COMMANDER OF A MECHANIZED COMPANY AND HIS CHIEF OF THE RADIO SECTION.
[Der Chef einer Panzer-kompanie und sein funkmeister] Captain Voss

PIONIERE (Germany)

BY MAJOR WM. H SPEIDEL, Infantry

August 1939

TWENTY-FIVE YEARS AGO: THE GERMAN AND FRENCH ENGINEERS IN THE ATTACK OF THE GERMAN THIRD ARMY ACROSS THE MAAS IN AUGUST 1914
[Vor 25 Jahren. Die deutschen und franzosischen Pioniere beim Angriff der deutschen 3 Armee uber die Maas im August 1914] Lieut. Colonel Dinter

This article covers the operations by both German and French engineer units and includes six sketches and plans, two timetables and six illustrations.

TWENTY-FIVE YEARS AGO: LIEGE
[Vor 25 Jahren: Luttich] Lieut. Colonel von Ahlfen

This is a brief article covering the hand-to-hand combat against Liege from 5 to 7 August 1914

SEVENTY-FIVE YEARS AGO: ENGINEERS IN THE CAMPAIGN OF 1864
[Vor 75 Jahren. Pioniere im Feldzug 1864.] Colonel Heye

The article covers the field engineering operations of the allied Prussian and Austrian forces in the Danish War

THOUGHTS ON MISSIONS, COMMAND AND EMPLOYMENT OF ENGINEER TROOPS BASED ON A COMPARATIVE STUDY OF THE GERMAN, FRENCH AND RUSSIAN FIELD SERVICE REGULATIONS
[Gedanken uber Aufgaben, Fuhrung und Verwendung der Pioniere auf Grund vergleichender Betrachtung der deutschen, franzosischen und russischen Gefechtsvorschrift] Captain Meltzer

COMMAND OF ROAD-CONSTRUCTION TROOPS IN THE THEATER OF OPERATIONS.
[Fuhrung von Strassenbautruppen im Gefechtsgebiet] Major General von Schaewen

QUARTERMASTER REVIEW

November-December 1939

FORTY QUESTIONS. MASS PROCUREMENT OF SUPPLIES
THE QUARTERMASTER PROBLEM

RASSEGNA DI CULTURA MILITARE (Italy)

BY LIEUTENANT COLONEL E M BENITEZ, Coast Artillery Corps

July 1939

THE ECONOMIC RESOURCES OF THE MEDITERRANEAN COUNTRIES
[Le risorse economiche dei paesi mediterranei.] (III) General Deambrosis

The author concludes his series of articles on the economic resources of the Mediterranean countries Italy, occupying a central position in the Mediterranean, needs iron, coal, oil and other products. She can supply Germany with foodstuffs while Germany, in turn, can provide Italy with industrial products.

THE PACIFICATION CAMPAIGN IN THE HARRAR PROVINCE.
[La campagna di grande polizia nel territorio del Governo Harar.] Major Carraglia

General Nasi, Governor of Harrar, was given the mission of suppressing the uprisings among the native tribes of Abyssinian Somaliland, in accordance with the plans of operations laid out by Marshal Graziani.

The territory conquered comprised an area of 89,000 square miles with a population of 1,400,000

Great credit should be given to the aviation, which materially assisted in coordinating the march and objectives of the columns, carried out reconnaissance and bombardment missions, attacked ground troops, and dropped supplies to those forces engaged in very difficult or almost inaccessible terrain.

OUR WESTERN BOUNDARY
[Al nostro confine occidentale] Captain Cuneo

A description, illustrated by a map, of the boundary between Italy and France in the Maritime Alps, fixed by Napoleon III in 1860.

ALBANIA (I)

Albania is a mountainous country, with an area of 11,000 square miles. Although it is one of the poorest countries of Europe and very malarious in parts, it has great possibilities.

August-September 1939

THE GREAT WAR IN RELATION WITH OUR EX-ALLIES.
[La nostra grande guerra nei rapporti con gli ex alleati.] General Corselli

When the tragedy of Sarajevo on 28 June 1914 was broadcasted, little thought was then given to the possibilities of a World War. Austria declared war on Serbia ignoring completely the third partner of the Triple Alliance.

Italy favored joining the side of the Entente from the very beginning of the war, but Russia opposed the Italian entry on the grounds that it would complicate the peace settlement at the end of the war. Russia had the Strait of Dardanelles in mind, and Britain and France sided with Russia.

The treaty of London signed 26 April 1915, outlined the concessions made by the Allies to Italy in return for her joining the Entente. General Corselli claims that Great Britain and France did not keep all these promises.

THE ECONOMIC RESOURCES OF THE MEDITERRANEAN COUNTRIES.
[Le risorse economiche dei paesi mediterranei.] (IV) General Deambrosis

Italy, France and Great Britain are the three great Mediterranean powers. Their commercial shipping is in the ratio 1 1 6, while their military tonnage is in the ratio 1 1 3. This places Italy in parity with France and inferior to Great Britain. However, Italy's central position in the Mediterranean gives her considerable advantage over her two rivals for supremacy in that sea

AN HISTORICAL COMPARISON AND A LESSON OF LIGHTNING WAR.
[Un confronto storico ed un insegnamento circa la guerra di rapido corso] Colonel Fiocca

Two lightning campaigns are compared. Napoleon's blow at Carcare in 1796 and the twelfth battle of the Isonzo in the autumn of 1917. In both campaigns the success obtained surprised even the victors.

COMPARISON BETWEEN THE GERMAN, ITALIAN AND FRENCH TACTICAL CONCEPTIONS.
[Concetti di tattica tedesca e raffronti con la concezione italiana e francese] Major Mascia

The tactics of modern armies is a constant adaptation to the improvements in equipment and motors. The German tactics are based upon boldness and rapidity of action and, consequently, the German Field Service Regulations tend to develop initiative and sense of responsibility.

Major Mascia discusses the doctrines of these three armies as regards reconnaissance, security, meeting engagement, attack, defense, pursuit and employment of tanks and artillery. He concludes that the tactics of the three armies have many points in common, but the dynamic character of the German and Italian tactics stand out in contrast with the measured and methodical character of the French tactics.

ALBANIA (II)

A description of the population, religion and languages of Albania. The Ghegs inhabit the north and the Tosks the south.

The principal cities of Albania are: Tirana (the capital), Scutari, Valona, Durazzo and Alessio.

THE ITALIAN ARTILLERY IN THE CAPTURE OF THE GORIZIA BRIDGE-HEAD.
(L'artiglieria italiana nella presa di Gorizia.) General Dallari

This was the first occasion on which the Italian artillery was numerically superior to that of the Austrians, which gave the Italians a distinct advantage over their enemies.

MILITARY ROADS.
(Strade militari.) Colonel Steiner

In the construction of military roads, local materials should be utilized as much as possible. The gradients may be steeper than those of ordinary roads, provided that steep climbs are broken up occasionally by flatter slopes. It is preferable to construct a double road, using one for outgoing and the other for returning traffic.

JACOMO FUSTI CASTRIOTTI, MILITARY ARCHITECT AND INVENTOR (1501-1562).
(Iacomo Fusti Castriotti architetto militare e inventore (1501-1562.) Professor Provasi

A biographical sketch of this distinguished military architect, who helped Michelangelo fortify the castle of St. Angelo. In 1533 he went to France and rendered distinguished services to Henry II and his successors during the wars against England and Spain.

REVUE D'ARTILLERIE (France)

BY CAPTAIN A. L. KEYES, Field Artillery.

April 1939

GENERAL E. PAGÉZY.
(Le général E. Pagézy.)

General Pagézy died 16 February 1939. His military career is briefly reviewed, particularly the outstanding role that he played in the development of antiaircraft artillery technique, both during and after the War of 1914-1918.

DO WE STILL NEED BALLOON OBSERVATION?
(Avons-nous encore besoin de l'observation par ballon? Lieut. Colonel Bonvillain

To judge from the tone of the article, there is a strong sentiment in France in favor of suppression of observation balloons. The author makes a plea for more exhaustive study of the question with a view to determining exactly what missions the balloon has heretofore fulfilled, how well it can continue to carry them out and what other agencies exist or will be developed in the near future which can be expected to perform more adequately than the balloon.

The services rendered in the War of 1914-1918 are a matter of record. Extracts from the "History of the 1st and 2d Balloon Regiments" are quoted to show the extent to which balloon observation was utilized and its efficacy. The author concludes that in general, in clear weather, one balloon was worth two escadrilles of planes in the performance of missions appropriate to it. The demonstrated advantages of balloons with respect to observation planes are: continuous observation from a platform which is practically fixed, uninterrupted telephonic communication with the agencies utilizing its information, rapid and precise transmission of information; freedom from problems of navigation, defense (this being a responsibility of ground agencies) and communication, daily ascensions of long duration in familiar territory; complete equipment with latest maps, charts and other aids, field glasses, and means of plotting or otherwise recording information. The plane, on the other hand, possesses the advantage of vertical observation at close range.

At present observation is as necessary to the army as it has been in the past and terrestrial observation may well be as difficult to obtain as ever. Condemnation of the balloon generally proceeds from comparison of the balloon of 1918 with the airplane and the artillery of twenty years later. The Aviation Maneuvers Regulations of 1925 recognize the principles that facilities for air observation must be economized by requiring of them only those missions which other agencies cannot fulfill and that airplanes must be utilized solely for those air missions which are beyond the capabilities of balloons.

If airplane development has rendered the balloon of no further use, it is evident that each army corps must be equipped with a certain irreducible minimum of planes and qualified observers to furnish that information which terrestrial observation cannot afford. As this requirement does not appear to be capable of fulfillment for five or even ten years, balloons must carry out their traditional functions or a satisfactory substitute must be found. The substitute must offer observation at least as effective as that of balloons; it must, in addition, be less vulnerable and lend itself more readily to defense. These requirements include the ability to observe during all daylight hours, weather conditions and hostile activities permitting, stability in the air, maintenance of observation on several objectives concurrently, and effective, continuous communications. The substitute should present a smaller target than the balloon to hostile air attack and artillery fire or be better able to avoid attack. Finally, it should engage fewer men and less matériel for its defense. The one substitute so far offered for consideration is the autogiro, a machine which has not progressed beyond the experimental stage for military use.

At the present time balloon capabilities are being insufficiently exploited. Considerations of expense have hindered development and both the artillery and higher echelons of command and staff have neglected to utilize this important service.

The essential problem under existing conditions is to determine whether or not the balloon can be maintained in the air; that is, whether or not it can be defended. In the War of 1914-1918 many were shot down; on the other hand, many companies were able, through training and discipline, to reduce losses to a very small number in proportion to services rendered. By a curious quirk of judgment, however, citations and decorations were usually awarded to units in the measure in which they suffered losses. On the whole, the testimony of history is inconclusive and experimentation must determine the capacity of modern equipment and training for defending the balloon against artillery fire and aerial attack.

Successful attack by aviation depends upon surprise. An extensive warning service enables the ground crew to reel in the balloon before the attack materializes and to greet the marauder with automatic fire. In the last war, some corps commanders disposed some of their antiaircraft artillery so that a visible barrage would discourage the offensive spirit of the attacking airmen. While present regulations do not cover this possibility, its effectiveness cannot be overestimated.

The question of efficacious defense cannot, however, be answered by historical reference or argument; it must be answered by experiment. If adequate protection against hostile aircraft is possible, the risks involved are disadvantageous to the attacker. The cost of pitting a very expensive plane manned by a pilot, highly trained for this special work, against a balloon of comparatively low cost, capable of rapid descent, and protected by antiaircraft weapons, may well be prohibitive.

Another problem to be solved by experimentation is that of the vulnerability of balloons to artillery fire. Balloons can, by rapid vertical movement, present a fleeting target; they possess also the ability of identifying hostile batteries to friendly counterbattery agencies.

The decision, involving as it does the vital question of observation, must not be based on prejudice or preconceived notions. The German army has reconstituted its "balloon batteries," attaching them directly to the artillery. Lack of study and experiments should not be allowed to place the French army in a situation comparable to that of 1914 when all of its field balloon companies had been abolished and its fortress units were on the verge of dissolution.

NOTES ON FIRING IN THE VICINITY OF FRIENDLY TROOPS IN MOUNTAINOUS TERRAIN.
(Note sur le tir au voisinage des troupes amies en montagne.) Captain Ailleret

The problem is to determine the minimum safe quadrant elevation which may be used in firing in support of infantry in terrain where the great difference in altitude between battery and target requires the employment of special methods. French firing regulations for mountain warfare give a mathematical solution based on formulas which the author finds may be difficult to remember, to derive or to apply in the field. He suggests a graphical method of approximations in which the errors are said to be on the side of safety.

A profile of the terrain lying in the plane of fire between the friendly front lines and the target area is constructed (Figure No. 1). On the

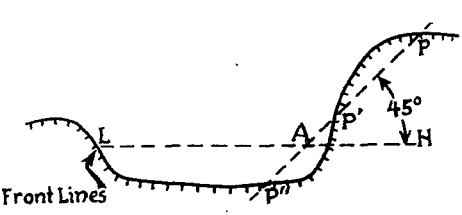


FIGURE NO. 1

horizontal line, L H, passing through the most advanced point of the front lines, a distance, L A, is laid off equal to the effective burst radius of the projectile used. Through A a line is drawn sloping upward in the direction of fire and making an angle of 45° with the horizontal. Depending upon the configuration of the terrain, this line may intersect the profile in one or more points (P, P', P'', etc.). Bursts on impact short of this line will produce shell fragments effective at L.

To arrive at similar results for time fire another step must be taken. The maximum linear height of burst of any rounds to be fired is determined and to this is added the linear value of four probable errors in height of burst, giving a sum which we may call h. A second line is drawn on the profile, parallel to the first, and at such distance beyond it that the vertical distance between the two equals h. The intersection of this line with the terrain gives the points corresponding to P, P', P'', etc., in the case of percussion fire.

To avoid bursts on the limiting line, at P, for example, the minimum elevation fired must be one which will produce a center of impact four probable errors beyond P. If the firing were on level terrain, the necessary data could be taken directly from the firing tables. In this situation, the point where the trajectory differing by four probable errors from the one producing a center of impact at P intersects the ground must be determined.

On the horizontal line P X through P (Figure No 2), a distance, P C, is laid off equal to the range value of one fork. Similarly, on the vertical line,

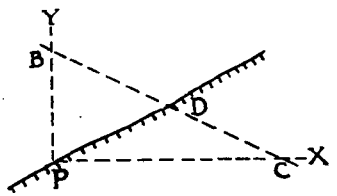


FIGURE No 2

P Y, through P, a distance, P B, is laid off equal to the vertical distance between the trajectories passing through P and C respectively Points B and C are joined by a line whose intersection with the terrain at D gives the point on the ground short of which fire will be dangerous to friendly troops

To determine an approximate value for P B, we must calculate accurately the quadrant elevation necessary to fire on P and that to fire on an imaginary point at the same range as P but at an altitude 100 yards higher than P. Dividing 100 by the difference between the two quadrant elevations gives the vertical equivalent in yards of one mil difference in elevation Multiplying by the number of mils in a fork gives us the distance P B.

A VERTICAL PERSPECTIVE "TERRAIN BOARD."
[Champ de tir vertical perspectif] (II) Captain Crespin

This article, begun in the issue of March 1939, is concluded in the April issue The following is a brief digest of the complete article.

A panorama, painted or photographed, is applied directly or projected by lantern on a vertical translucent screen Bursts are represented by small electric lights behind the screen, a triangular red light indicates a burst or impact visible in its entirety; a white circular light indicates an air burst completely visible; two vertical white lines represent an "over" or any opaque object except for "overs" near the crest of a hill, for which a white segment of a circle is used The different colors and forms are obtained with a slide mounted on the lamp for each piece.

It is argued that this equipment presents to a group of students a much more realistic picture of a target area than is possible with a terrain board and that from every position in the room the terrain is seen as though from exactly the same observing point. Thus, all observers see rounds in the same relation to the objective as the person firing It is further claimed that all elements of a fire command can be applied accurately and rapidly, that the equipment is not unduly expensive and that it can be readily set up, dismounted and transported.

That the apparatus is ingenious is incontestable. It requires, however, in rear of the screen a different master chart for every different position of the battery with respect to the observation post. On these master charts a series of lines running in a general horizontal direction represent the various ranges and carry, besides, an indication of the correction giving a zero height of burst at that range Another series of lines, generally vertical, represents the various planes of fire corresponding to different deflection settings. The intersection of the appropriate horizontal and vertical lines marks the level point of any particular trajectory Other symbols on the master chart indicate crests and other objects which mask observation on rounds beyond and below them Effects of site, corrector and dispersion are provided for by scales affecting adjustment of the lights. A final refinement provides lines on the master chart showing the inclination to be given the light supports in lateral time fire in order that the apparent lateral displacement of rounds due to corrector changes may be observed in proper relation

These considerations lead the reader to believe, without further enlightenment, that the apparatus would require the services of a full-time expert to design the master charts and to operate the mechanism without ludicrous results and great delay between "rounds."

NOTES ON RANGE CORRECTIONS.
[Note au sujet de la détermination de la distance corrigée] Lieutenant Carrette

French firing regulations state that, when determining range corrections for conditions not standard, greater accuracy can be expected if the corrections corresponding to the mean between the map range and the first corrected range are taken and applied to the map range rather than taking the first corrected range as final. By repeating the same process several times with each new corrected range obtained for a given map range we finally arrive at a point where the final corrected range does not change by repetition of the process.

Ex. map range = 4500. Corresponding correction = +250
1st corrected range = 4500 + 250 = 4750
Mean range = 4625. Corresponding correction = +263
2d corrected range = 4500 + 263 = 4763
Mean range = 4632. Corresponding correction = +263
Since the corrections for the last two mean ranges has been the same, the final corrected range is 4763

The basis of this principle is not discussed in the article but it seems evident from the fact that the range corrections corresponding to a certain map range, as 4500, for instance, will be actually produced only on a trajectory passing through the target and having the maximum ordinate given in the firing tables for a trajectory of that length of base under standard conditions. Application of the corrections theoretically gives a trajectory passing through the target, the trajectory itself has been altered, however, by conditions not standard and has a maximum ordinate differing from that given in the firing tables in the same sense as the trajectory which corresponds, under standard conditions, to the range which we have called above the first corrected range Thus, the corrections which are actually applied should correspond to a trajectory having the map range as a base, a quadrant elevation corresponding to the corrected range and a maximum ordinate midway between the maximum ordinates of the two trajectories under standard conditions with bases of map range and corrected range respectively.

Lieutenant Carrette proposes two methods, one graphical and one by formula, for performing in one step the calculations described in the first paragraph of this discussion

GRAPHICAL METHOD.

Under a given set of conditions he plots his curve as follows.

Map Ranges	*Calculated Corrections*	*X-coordinates of plotted points*	*Y-coordinates of plotted points*
4000	+200	$4000 - \frac{200}{2} = 3900$	+200
5000	+300	$5000 - \frac{300}{2} = 4850$	+300
6000	+400	$6000 - \frac{400}{2} = 5800$	+400

On his graph the correction (Y-reading) for any map range (X-reading) is therefore equal to that obtained by our series of mathematical approximations This is shown in the article both algebraically and by application to a particular problem.

FORMULA METHOD

By algebraic methods Lieutenant Carrette deduces the formula. final computed correction

corrected range = map range + $\frac{\text{final computed correction}}{1 \quad a.2}$ a is the tangent of the

angle between the X-axis of the graph in the graphical method and the correction curve, the latter being theoretically a straight line between any two ranges which are even multiples of 1000 yards. Practically, it is determined by subtracting the corrections corresponding to the two even multiples of 1000 yards greater and less respectively than the map range and dividing this difference by 1000

Of the two, the formula method seems to be the more practical. The graphical method would require the construction of a separate graph for each direction of fire on a weather correction diagram and would consequently appear to economize little time or effort over the original method indicated in the firing regulations.

MISCELLANEOUS INFORMATION.
[Renseignements divers]

Organization:

United States: Organization of the infantry division.
Italy. Military forces

Armament:

China: The Hotchkiss Antiaircraft machine gun.
Yugoslavia: Artillery composition and armament.
United States School of Strategy of Supply (Army Industrial College).
Great Britain. Reorganization of the Staff School.

May 1939

AN HISTORICAL ACCOUNT OF THE EMPLOYMENT OF ARTILLERY. FROM MARIGNAN TO WATERLOO I. DURING THE FRANCO-ITALIAN WARS OF THE 16TH CENTURY. II. IN HENRY IV'S TIME.
[L'emploi de l'artillerie au cours de l'Histoire. De Marignan à Waterloo. I. Pendant les guerres d'Italie. II. Au temps d'Henri IV.] General Peyrègne

The War of 1914-1918 was characterized in great part by siege operations on a vast scale. It is to be expected that in a future war both sides will

endeavor at the outset to penetrate the hostile fortified zone along the frontier and to carry through to a decisive war of maneuver in the interior of the enemy's country These are the considerations which have lead the author to study the history of artillery employment with particular emphasis on its use in open warfare

In the Franco-Italian Wars of the sixteenth century, cannon played an important rôle The proportion of artillery to infantry, between 4 and 7 pieces to every 1000 infantrymen was greater than was ever again attained until the War of 1914-1918 and great effort was made to keep the artillery with the advancing army, even in the most mountainous terrain The protection of the artillery, on the march, during the deployment, and in combat, was a major preoccupation of the commander and it fully justified these measures by the destruction wrought in the hostile ranks and by the demoralizing effect produced, particularly when enfilading the enemy or taking him in the rear from positions initially concealed The hostile infantry was, of necessity, the sole objective of these early pieces, their inaccuracy prevented effective use in counterbattery The massing of fires on the front of the main effort was understood but its execution, due to short ranges and to the elementary character of the matériel, depended upon physical grouping of masses of artillery on the decisive front These pieces, committed initially on the line of battle, could not be withdrawn, the main action took place on the ground they occupied and the guns had to be defended to the utmost If they fell into the enemy's hands, they were quickly turned upon their late masters The modern development of mechanized attack indicates a return to this type of close-range combat in which the artillery will come to grips with the hostile forces

At the Battle of Ravenna, an attempt was made to preserve the freedom of action of the Spanish commander by the constitution of a mobile artillery reserve of twenty or so culverins on armored carriages Failure to commit this reserve at the decisive moment resulted in failure of the experiment

The necessity of teamwork between the artillery and the supported troops was demonstrated in several actions when infantry and cavalry, advancing beyond the range of the artillery and its capacity of following or massing its fire, were set upon by the enemy and destroyed

Nearly a century later, Henry of Navarre wrote a new chapter in the history of warfare His troops were few in comparison with those he faced and were weak in artillery. Such artillery as he had was not readily displaced Under these unfavorable conditions Henry distinguished himself by highly effective use of terrain and maneuver His tactics, reduced to simplest terms, consisted of selecting a strong, commanding position with unassailable flanks on the enemy's route to his objective, occupying this position with a minimum of infantry strongly reinforced with artillery, harassing the enemy with vigorous attacks by cavalry and infantry so as to draw him towards the position selected, and then maneuvering against the hostile flanks and rear with the mass of his forces when the enemy was committed to attack of the position

FIRING METHODS OF ANTIAIRCRAFT ARTILLERY DIRECT FIRE AND INDIRECT FIRE

[Modes de tir de l'artillerie de D C A Tir direct et tir indirect] Captain Ferrer

Two opposing views are presented without comment, each offered as it might be by a protagonist of the method given

A preliminary orientation explains that batteries which execute direct fire are equipped with an instrument for tracking the target and with the calculator necessary for laying the piece with respect to the instrument so that a projectile fired will, theoretically, meet the target at a predicted point. Batteries equipped for indirect fire are laid by their crews according to tracking and calculating operations performed by a central fire-control section The firing unit under present tables of organization and conceptions is the battery of four pieces, it cannot be subdivided. When using sound locators, these must be posted at least 3 miles in advance of the pieces, indirect fire batteries only can utilize them

THE CASE FOR INDIRECT FIRE

Its advantages are

(1) Sight defilade is much more effective. The only element which need be sited for favorable observation is the central fire-control set-up and this, separated from the pieces, is readily camouflaged.

(2) Target designation and identification concerns only the one group which is under the direct supervision of the battery commander, no error in identification and resultant scattering of fire occurs.

(3) The number of complicated instruments has been reduced with economy of money, specialized personnel, and maintenance effort

(4) The fire-control group operates at a distance from the distracting noise and activity in the vicinity of the pieces.

Its disadvantages are

(1) The complicated and delicate communication system necessary to transmit data to the guns is difficult to maintain and its installation involves some delay in emplacing a battery This objection obtains equally for the other system, however, as voice communication during firing is utterly impracticable.

(2) The difficulty of close defense of the battery itself against direct attack by hostile ground forces To meet this objection, each piece must be equipped with sights necessary for direct laying.

(3) The complication in a system which requires computation at a fire-control central of mean data for the battery as a whole On the other hand such a method results in uniform distribution of fire which compensates in great measure for errors that may come from the complexity of operations.

(4) Dependence of the battery on a single control system which may be put out of action. This is the one real disadvantage that carries any weight. In both systems, dependence is placed upon data reported centrally as to altitude, speed, direction, and range of the target. To meet the objection, equipment and men for two fire-control centers must be provided so that the second can take over if the first goes out Such a provision almost meets in part disadvantage number one preceding. The second fire-control group occupies a new position and completes all installations before the battery displaces from the old position.

THE CASE FOR DIRECT FIRE

First of all, a distinction must be made between the requirements of antiaircraft batteries with the mobile forces in the field and those assigned to defense of rear areas In the latter case, neither the advantages nor the disadvantages of the indirect fire system carry any weight. In general the system is preferable.

In the antiaircraft artillery with the field forces, *the situation is quite* different The commander of an indirect fire battery is forced either to stagger his battery over a front of some 300 yards and, by computing mean data for his guns sacrifice accuracy of fire or else, neglecting the safety of his guns, he must concentrate them and expose them to destruction.

The direct-fire battery, on the other hand, can be widely spaced, terrain permitting and, since each piece is independently adjusted to place its center of impact on the target, more hits should result. It must not be overlooked, however, that this wide dispersing of pieces creates an increased possibility of error in target identification, that it makes the exercise of command more difficult, and that the terrain frequently restricts the choice of separated gun position.

The solution to the problem seems to lie in compromise or, more accurately expressed, in greater flexibility, that is, an organization permitting centralized battery control, control by platoon, or the direct system. The advantages of such an organization are obvious

The objections to this proposal are three-fold: first, each battery must be equipped with an increased number of fire-control units; second, the fire of a platoon alone on a target is believed in some quarters to be ineffective, thus negating part of the proposal's claim for tactical flexibility; third, a platoon firing at night by direct-fire methods cannot be adjusted by sound locators.

To the first objection reply is made that questions of economy should not be allowed to interfere with an essential improvement, that for certain batteries now in service only one or two additional fire-control units would be required, and that provision of the necessary equipment is certainly less difficult and costly than the replacement of entire batteries destroyed in war as a result of incorrect initial organization

As to the effectiveness of fire by a single platoon, it appears that it the method will allow greater accuracy, expose the pieces less to destruction, and permit the engaging of a large number of planes with the same quantity of matériel, fire by platoon may more effectively neutralize hostile aviation and neutralization of the mass rather than destruction of single planes is the true *mission of antiaircraft artillery*

Finally, if platoons firing direct fire cannot be adjusted by sound locators, the same objection is equally applicable to any fire unit in the forward areas where the sound locators cannot be sited sufficiently in advance of the guns to furnish usable data and where the confusion of battle renders sound equipment useless anyhow

SPECIAL CASES OF EFFECT OF WIND ON PROJECTILES.

[Cas particulier de l'influence du vent sur les projectiles] Captain Lagarde

The effect of non-standard meteorological conditions on artillery fire and the means of correcting initial data to compensate for it are well covered in regulations. Two cases are treated here which, unless understood by the battery commander, may give surprising results, in agreement with the author, it can be said that the only solution in these cases is a careful surveillance of fire by any or all means available and possibly, in the second case, a suspension or postponement of fire during the time that abnormal atmospheric conditions persist

The first case is that where a terrain mass of large proportions blocks or restricts the movement of the wind. The effect is best understood with reference to a mountainous ridge lying perpendicular to the direction of *movement of the wind The lower layers of the atmosphere are compressed* between the upper layers and the ground surface and a higher velocity of the lower layers is produced such as occurs in the venturi tube of a carburetor The effect on a projectile passing through the lower atmospheric layers is to increase or decrease the range, depending upon the wind direction This effect is complicated by the increased atmospheric density and the lowered temperature in the region of accelerated wind velocity Another result that may affect fire for some distance short of or beyond the crest is the creation of eddies beneath the atmospheric layers which succeed in passing the crest Still another effect is the deformation of wind movement where it passes laterally around the ridge The conditions vary endlessly with changes in wind direction and variations in the form and in the position of the terrain mass with respect to the position of the gun and the plane of fire. A mathematical solution of the problem is quite evidently impossible under field conditions, it is essential to understand the causes of variations produced and to insure observation of fire executed under these conditions.

The second special case treated is that of a sudden squall accompanied by a rapid change in direction and speed of the wind, a correspondingly rapid rise in barometric pressure and a decrease in temperature and other conditions seriously affecting the flight of projectiles and the possibility of observation, both terrestrial and aerial. Meteorological readings are difficult

if not impossible to obtain and are nullified almost immediately. When observation fails completely, the only recourse appears to be to postpone operations until atmospheric conditions again stabilize

A GRAPHICAL METHOD FOR PRELIMINARY DETERMINATION OF POSSIBILITIES OF OBSERVATION.
[Méthode graphique de détermination préalable des possibilités d'observation.] (I) Lieutenant Chamouard

The system described is intended to furnish a graphical representation of the area visible from any proposed observation post together with a panoramic sketch so distorted that any topographical feature on the chart appears on the line joining the plotted position of the observation post on the chart with the same topographical feature on the panoramic sketch. The chart carries, not the actual contours of the terrain represented, but curves obtained from intersecting the ground surfaces with a series of cones, each having the observer's eye as the apex and having its surface correspond with the successive positions of the line of sighting as the eye, fixed at a certain angle of site, scans the terrain. The resulting curves are called equisite (equal site) curves.

The construction of the paraphernalia necessary to form the graph, as well as that of the graph itself, is quite complicated. It is difficult to see what object is served that is not attained more simply and rapidly by construction of the visibility sketch familiar to our service, when a brief examination of the map or a personal reconnaissance is ineffective

MEMORANDUM ON THE EFFECTIVENESS OF ARTILLERY ANTITANK BARRAGES.
[Note sur l'efficacité des tirs d'arrêt dans la défense contre les chars.] Lieutenant Brunswick

This study is less extensive than that of Lieutenant Colonel Duval in the March issue of "Revue d'Artillerie," and makes greater use of approximations in applying the theory of probabilities. The conclusion is that the probability of securing at least one hit from a 75-mm gun battery, firing at the maximum rate on a 100-yard front at a fixed range of 3,000 yards on level ground, against a line of tanks, advancing frontally with an interval of 50 yards between tanks, is only 3½'. The tanks are considered to be moving at a speed of about 11 miles per hour and during the time that they are crossing the zone of dispersion of the barrage, the battery can fire about 13 rounds.

To the study is appended a graph by means of which the probability of obtaining at least one hit is determined with respect to any given number of rounds and to any given probability that each round has of striking the target.

While the chances of obtaining a direct hit are much reduced, the author attaches great importance to the moral effect on friendly troops of such antitank barrage fire and to the effect of smoke and dust on the mobility of the tanks

MISCELLANEOUS INFORMATION.
[Renseignements divers.]

Armament:

England Antiaircraft guns (9, 8, and 12 centimeters)
A machine gun equipped for automatic exchange of a cold barrel for a hot one during fire.
United States: Thompson light machine gun.
Hungary: Soluthurm machine pistol
Italy Breda 20-mm gun (antiaircraft and antitank)
Sweden. Bofors double-barreled antiaircraft guns (25-mm, 40-mm, and 75-mm).

Motors and tanks:

United States: M-2 cavalry tank and Christy light tank Armored car.
Switzerland: Saurer cross-country vehicles
Soviet Russia: The new 33-ton tank, mobile escalator for loading and unloading cargoes

REVUE D'INFANTERIE (France)

BY CAPTAIN M. R. KAMMERER, Infantry

June 1939

MARSHAL JOFFRE AND THE INFANTRY.
[Le maréchal Joffre et l'infanterie.] Colonel X

The author, who signs his article "One of Joffre's Doughboys," pays glowing tribute to his former commander in chief, who, though an engineer, made every effort to understand the infantryman, his mind, his characteristics, and his problems. Joffre, one of the least communicative of men — he talked little, wrote less — was able to impart his own personality to every infantryman serving under him. Their fortitude was a reflection of his. Their quiet confidence, their resoluteness on the offensive, their stanchness on the defensive are traceable to those same fine qualities in their chief. He did not consider himself too important to seek advice among recruits if he thought they could furnish the information he desired. Their welfare and progress interested him and only from them could he learn about them.

INFANTRY AND TANKS CADRES.
[Les cadres de l'infanterie et des chars de combat.] By J. P. and R. S.

The authors of this article have delved into the numerous and very scattered documents and regulations on the subject of schools for officers and noncommissioned officers of the French infantry, and have compiled their findings in a clear, concise form.

The French system of infantry and tank schools is based on the realization of:

(1) The difficulty of obtaining the large number of qualified officers and noncommissioned officers necessary in time of war.

(2) The importance of finding outstanding men of all social and intellectual classes to handle the widely diversified types of personnel and armament

(3) The specialization required of certain groups of subalterns as a result of the variety and complexity of modern matériel.

(4) The importance of periodical instruction to keep up with the constant evolution of methods and doctrines.

RECOGNITION AND IDENTIFICATION OF TANKS IN COMBAT.
[La reconnaissance et l'identification des engins blindés au combat.] (II) Captain Lehoux

In this second and last article on this subject, possible solutions to the problems previously discussed are offered. Noting many similarities, though admitting certain differences, a study of methods used by naval vessels to distinguish friendly from enemy ships reveals means that can be applied equally well to the identification of friendly tanks. The numerous cases of deception and misinterpretation of signals occurring between vessels during the World War make it plain that no signal is perfect, no single precaution is sufficient unto itself

The problem of finding a satisfactory signal or system of signals for the identification of tanks is not easy. It involves not only the recognition of tanks between each other, but also recognition by friendly observers on the ground and in the air

The ideal identification signal should be: interrogatory (demand and reply), easy to use, producible by a small, compact, sturdy machine; usable day or night; possible of variation.

Recognition of friendly tanks by observation is a matter of training, particularly applicable to gunners of antitank weapons, observers on the ground and in the air, and personnel in armored vehicles, although all troops should be familiarized with the appearance of friendly, and if possible, enemy tanks.

THE 23D INFANTRY DIVISION IN THE BATTLE OF VITTORIO-VENETO, 24 OCTOBER 4 NOVEMBER 1918.
[La 23e D. I. dans la bataille de Vittorio-Veneto (24 octobre–4 novembre 1918).] Captain Ingold

The Twelfth Army, pushing north in Italy during the latter days of the World War, was forced to cross an elbow of the Piave in the vicinity of Valdobbiadene. This elbow, extending westward into the eastern half of the Twelfth Army sector, had to be cleared of Austrian troops, who held it strongly and could have prevented the Army's advance.

The French 23d Infantry Division, attached to the Twelfth Army for the period of these operations, was given the mission of establishing the bridgehead to cover its own crossing and that of two Italian divisions, which, upon crossing, were to resume the advance on the right of the 23d Division. The 23d Division, after crossing, was to advance up the eastern bank of the Piave (in the elbow). On the opposite bank was the rest of the Twelfth Army. Alternate efforts on either side of the river would assist the advance on the opposite bank.

The author, after quoting the directives pertinent to the operations of the 23d Division, discusses the action, which included:

The forcing of the river under the converging fires of many batteries of Austrian artillery and practically under the eyes of Austrian observers.

The protection and organization of the passage of three divisions over a single bridge which was built, demolished, and rebuilt on three successive nights under hostile fire. Nor did a swollen river facilitate the crossing.

The attack, as soon as the crossing was completed, of formidable objectives without much assistance from the divisions whose crossing had been prepared and covered.

The advance into mountains 5,000 feet high.

The capture of 3,000 prisoners, over 100 pieces of artillery, 23 mortars, 150 machine guns.

The loss of 139 men and officers killed, and 397 wounded.

This action of the Twelfth Army is reminiscent of a similar crossing of the Piave in 1809 by the army of Prince Eugene.

THE NEW INFANTRY REGULATIONS.
[Le nouveau Règlement d'infanterie.] Captain de Linarès

The purpose of this article is to outline the contents of the recently published "Instructions for Light Infantry Units." Simplicity and uniformity characterize these instructions which are clarified by ample use of illustrations.

Among the points emphasized is that of the position of leaders. When hostile fire is anticipated, a leader should be with some fractional element of the unit he commands in order to be able to initiate, on a part at least of his unit, immediate action of fire or movement. At other times he should guide his unit from in front.

All instruction should be progressive, and in combat exercises of units larger than the squad, attention should be devoted to the instruction of the leaders and not to that of the troops. Such exercises should not be attempted, then, until the fundamental unit, the squad, has reached perfection in training. And perfection is not reached until each member of the squad is able to get along by himself, without the guidance of a chief. Not only must his reflexes be developed, but also his intelligence and initiative His combat missions have been reduced to three simple ones: fire, advance and assault, defend.

Instructions concerning units above the squad present no unusual features other than in the method of presentation The text is meant for practical rather than theoretical use.

NATIONAL DEFENSE ACT.
[La loi sur l'organisation de la nation pour le temps de guerre.] Captain Le Hingrat

This law is based on the experiences of the War of 1914, and is intended to prepare for the immediate mobilization, in time of war, not only of the military forces but also of politics and industry. It is based on the following principles.

(1) War is a national affair, affecting every citizen.

(2) Everything and every individual should be devoted to the defense of the nation.

(3) No one should derive profits from war.

(4) The conduct of a war should be entrusted to the government, which should control the military forces.

The law is truly one of national defense, for its measures, in whole or in part, can be evoked only in cases of manifest aggression, of exterior tension, or of upholding the provisions of the League of Nations pact

The Superior Council of National Defense is charged with the execution of the law, and is composed of all the ministers of the Cabinet. Those of war, navy, and air may be coordinated into one department under a minister of national defense who would be assisted and advised by a kind of generalissimo chosen from the chiefs of staff of the army, navy and air service.

Every Frenchman over 18 years of age may be called into service – military or other. The service of women, though not required, is not prohibited

The government is responsible for the general conduct of a war. It determines the objectives to be attained by force of arms, places the necessary means at the disposal of the military forces and supervises their use. The commanders of the military forces are responsible for the conduct of operations in the various theaters of war. Although a generalissimo, in command of the army, navy, and air service is not provided for, the activities of these forces have, as previously noted, been coordinated under the Minister of National Defense.

Cabinet ministers are responsible for the administrative organization of the national resources, each in his own field, and in case of conflict or duplication of efforts, such as might be discovered in the annual reports of the ministers, a newly created Supply Minister coordinates the efforts.

Although the law may not be perfect, it is believed that it will provide for a satisfactory transition of the nation from a peace- to a war-time basis.

July 1939

FRENCH TANKS.
[Les chars français.] By R P and M M.

Concerning the use of tanks, the French consider two general cases. (1) against an enemy in an organized defensive position, and (2) against an enemy who has had little or no time to organize his position.

In the first case tanks must act in close liaison with infantry, artillery, and air service. Medium tanks, capable of great speed and heavily armored, form the advance echelon Working with the artillery their actions are controlled by commanders of higher units who are responsible for coordinating artillery fires and tank advances. The medium tanks are followed by light tanks accompanied by the infantry. The actions of these light tanks are controlled by the commanders of the infantry units. Since the effects obtained by tank action are considered as fleeting, it is absolutely essential that the infantry exploit promptly any gains made by tanks.

In the case of an enemy caught by surprise or disorganized as a result of an attack on his position, tanks operating alone or with little assistance from other arms (particularly mechanized troops) prove extremely effective. They can either widen a breach already made or continue the penetration in depth without that close cooperation of other arms that is required against an organized enemy

In time of peace, tanks are organized in brigades and regiments which permit of economy of personnel, superior instruction, and economical maintenance.

In time of war, tanks are grouped in battalions assigned to corps The battalion organization is considered powerful, maneuverable, easy to command, and self-sufficient in so far as repair and evacuation are concerned.

French tanks are usually armed with a machine gun and one or two cannons whose caliber depends on the type of tank. The tanks are not built with a view to sensational speeds for speed demands the sacrifice of more important and desirable qualities. Furthermore, the fire power of tanks is not effective except at slow speeds. Great strides have been made in recent years toward improving vision, mechanical functioning, communication, and stream-lining of French tanks.

THE USE OF TANKS IN FOREIGN ARMIES
[L'emploi des unités blindées dans les armées étrangères.] Major B

British tanks.— The British originally visualized the tank as a strategic maneuver element whose speed and great radius of action would complete the action of cavalry in wide envelopments and encircling movements. This theory has been somewhat tempered by a careful examination in recent years of the tank's capabilities, and the result is a mission which, though still bold, is somewhat more limited In open country (British colonial territories, for example) tanks can be used in envelopments, working in the enemy's rear area from around the flanks or through breaches in the hostile line. The tank brigade, composed of both light and medium tanks, is used on such missions and should be accompanied by motorized infantry and artillery

Where the terrain prohibits easy maneuvering, the British tanks move by bounds when at a distance from the enemy and by infiltration in the combat zone. This is but an adaptation of British cavalry tactics

In attacking a well organized defensive position the British offer two solutions: an attack by a great number of small tanks armed with one machine gun each, or an attack by heavy tanks assisted by infantry, artillery and aviation

German tanks.—The German command has placed its tanks by brigades in armored divisions consisting of a brigade of tanks, a brigade of motorized infantry, a group of motorized artillery, and the necessary service battalions. Such an organization is capable of rapid, strong, and prolonged action over a front of 1500 to 3000 yards and to a depth of from 4 to 6 miles where terrain is favorable. In unfavorable terrain, tank action is limited to accompanying missions, but once the difficult area is passed, the tanks are regrouped immediately and the motorized division moves forward on a mission of exploitation.

In addition to the tank brigades of the motorized divisions, Germany has tank regiments whose missions are essentially those of accompanying tanks.

All tank units, even down to the company and section are composed of light tanks (lightly armed and armored) and heavy tanks which protect the light tanks in action

Italian Tanks.—The Italian tanks, like German tanks, are usually integral parts of larger units. In the celere division they form a base of fire, reinforcing the units making the principal effort. In the motorized division they are the principal arm, supported and protected by infantry, artillery and engineers. Independent battalions of tanks may be assigned to corps. Italian doctrine on the use of tanks closely resembles that of the Germans, except that the former do not contemplate independent tank action. Their action is limited to a smaller radius and is closely linked with infantry support.

Russian tanks. The Russian tanks have the normal mission of assisting infantry attacks by neutralizing enemy automatic weapons. The Russians have also foreseen a more important use to which tanks may be put — cutting the hostile lines of communication Having made a penetration, or taking advantage of a penetration made by other arms, Russian tanks are organized and prepared to move into enemy rear areas, remain there as long as four days operating against hostile artillery, supply columns, reserves or tanks. Russian aviation, working with such tank units, can assist them by reconnaissances and by dropping parachute troops Tanks operating on such missions are called distant action tanks. They form two brigades of a mechanized corps, each brigade composed of four battalions of light or heavy tanks.

Japanese tanks – In its present war on Chinese soil, Japanese tanks have been used occasionally No real conclusions concerning the tanks' value and use have been possible, however, due to the small number of tanks possessed by the Japanese and due to the lack of opposition to them by the Chinese. Japanese tanks have been successful employing cavalry tactics in envelopments and in exploiting infantry successes. They have been used considerably in mopping up villages

The Japanese tanks are organized in regiments of two battalions each. Each tank regiment is a part of a brigade which also includes a three-battalion regiment of infantry transported in trucks. These brigades have been able to operate independently and successfully in China due to the nature of the terrain and of the campaign.

COMBAT IN THE WOODS DURING THE BATTLE OF THE MARNE, SEPTEMBER 1914
[Un combat sous bois au cours de la bataille de la Marne (septembre 1914).] Colonel Guigues

Account of an action during the battle of the Marne illustrating:

The defensive power of a few companies of infantry carefully placed in position and equipped with several well-concealed machine guns.

The value of fire and movement in cleaning out such a defensive position.

The importance of making a reconnaissance even though higher orders indicate immediate action In this particular case, if the commander had taken a few minutes to locate the enemy's flanks he would have saved many hours and lives that were lost trying to strike the enemy position from the immediate front

IS AN INFANTRY AIR SERVICE DESIRABLE?
[Une aviation d'infanterie est-elle désirable?] Major Laporte

The conclusion drawn here is that unless closer cooperation can be maintained between air and ground units — infantry, artillery, or cavalry — the latter would have to develop their own air service. Such a plan is not desirable for several reasons.

The air service is not, however, equipped to render those services required by the land forces · aerial observation of the battlefield, rapid communication between units, and combat support. Either present equipment must be altered or new planes will have to be developed with the missions of the ground forces in mind.

THE ATMOSPHERE OF THE BATTLEFIELD.
[L'atmosphère du champ de bataille.] Lieut. Colonel Armengaud

This is in the form of an annex to the two previous articles on this subject by the same author. From the works of many authors he has chosen and arranged quotations illustrating both the physical and moral atmosphere of war.

REVUE MILITAIRE SUISSE (Switzerland)

BY CAPTAIN A. L. KEYES, Field Artillery

July 1939

ATTRIBUTES OF A JUNIOR TROOP LEADER.
[Des qualités du chef subalterne.] Major Couchepin

In agreement with Montaigne, Major Couchepin finds that it is extremely difficult to render a fixed and positive judgment on the worth of any individual. By the test of battle one officer of excellent reputation is found lacking in some essential, another, on the verge of forced retirement for incapacity, rises to an emergency and reveals hidden depths of character which lead him to the highest posts of command. In general an officer judged efficient by peace-time standards fulfills all expectations in war as well. But, based on historical records, there are all too many upon whom adverse judgment has been passed in school and garrison and who have still revealed themselves in action as leaders of singular merit.

The task of those charged with instructing and passing upon the capacity of candidates for a commission and of junior officers is a difficult one. A healthy body and physical vigor are important to troop leaders but the exaggerated esteem which athletic prowess enjoys at the present time should not blind the authorities to the abilities of a young man otherwise amply endowed with the qualities of leadership but incapable of being a first-class athlete. Where earlier periods of history conferred command upon the most ardent in hand-to-hand combat, modern platoons and companies have far greater need of an intelligence which understands the capabilities of their weapons, the skillful combination of fire and movement to attain a military objective, and the effective use of terrain. Even more must the present-day leader be imbued with a sense of duty, the spirit of self-sacrifice, loyalty, and discipline in the highest sense of the word.

With all of these qualities, one individual of sterling character and great intelligence may often fail as a leader of men while a man of lesser merit will be followed by his command to the ends of the earth. The secret lies in the ability of the officer to project his personality upon his troops, a quality difficult to predict since there is no one method of exercising leadership.

Judgment as to the capacity of junior officers and candidates implies therefore not only the determination of their worth as individuals but also a sort of prophecy as to their power, actual or potential, of projecting their personality. When the young officer takes over his first command, it is the duty of his superiors to give him every opportunity to develop his capacities along lines best suited to his character. This involves giving the subaltern as free a rein as possible, guiding him by advice only when he cannot solve his own problems and even then in such a way as to develop his self-confidence, his own particular personality, and the faculty of exercising command in accordance with principles in harmony with that personality.

A final judgment should never be rendered upon an officer until he has been observed under conditions resembling somewhat those of the battlefield. A well-disciplined and smartly-dressed unit is a primary indication of a good leader but the true test comes when an accident occurs, an unforeseen danger threatens, or some unusual effort is required. Last of all, a true leader is not one who is himself a poor subordinate. Leadership is not an end in itself; it includes loyalty to constituted authority from the lowest to the highest, a loyalty which is transferred easily to successive commanders.

THE PROBLEM OF THE "UNORGANIZED RESERVE" OF TRUCKS.
Le problème des camions utilisables par l'armée.] Captain Tapernoux

In Switzerland, as in other European countries, trucks, like men, are liable to conscription in a military emergency. It naturally results that the federal government is vitally interested in the types, ages, and equipment of trucks operated by civilian owners throughout the country. Figures are quoted to show that out of a total of 19,000 trucks now in operation, fewer than 9,000 are suitable for military use even by relaxing the requirements to the greatest possible degree.

The present article has two parts: first, a discussion of the advantages and disadvantages of rail and motor transportation with a conclusion that railways are still of vital importance to national defense, second, a review of the measures which the Federal Council has taken to increase the number of trucks in use, to reduce the average age of these vehicles, and to normalize* the situation.

The railroads are capable of moving large masses of troops and supplies with no great change in operating procedure other than an increase in traffic density. Large truck movements, on the contrary, require many special arrangements to prevent conflict with essential local traffic, both civilian and military, require transport personnel in far greater proportion to the troops or cargos moved than do railways, and consume enormous quantities of motor fuel. Rain, snow, and night movement without lights have much greater effect on motor vehicles than on railways. Electric power, utilized to a high degree by Swiss locomotives, is a national product whose source is safeguarded from hostile attack by the flexible network of power lines and by the location of many power plants in mountainous terrain accessible only with difficulty to enemy aviation. Gasoline is not a national product; its supply from abroad is subject to serious interruption and reserves within the country are open to bombardment. A study of the relative vulnerability of rail and water routes and of the effect of interruptions to service over these lines is not unfavorable to the railroads. Granting that motor transportation is essential to tactical movement, Captain Tapernoux finds that the record of motor failures in the 24-hour occupation of Austria by German troops last year clearly indicates the danger of too great reliance upon motorization.

As to measures taken by the Federal Council to improve the motor situation, they consist principally of subsidies designed to aid civilian owners in procuring new vehicles of Swiss manufacture (for which parts will be readily available locally in case of war) equipped with special military accessories and of capacities suited to military needs. In addition, these subsidies encourage development and use of vehicles adapted to utilization of a fuel procurable within the country, notably wood gas. Without such subsidies, making up, in part at least, for expenses which civilian owners would have to bear without personal advantage, there could be no appreciable advance towards the triple objective previously mentioned.

THE LANDSTURM AND THE ACTIVE FIELD FORCE. A TERRITORIAL'S RECOLLECTIONS.
[Landsturm et armée de campagne (Souvenirs d'un territorial).] Lieutenant Bovet

We have here a testimonial as to the value of trained men who have passed beyond the age limit for immediate service in the first-line units but who are kept up to a relatively high state of efficiency by brief annual refresher periods of field duty. The élite of these troops are the veterans of the years 1914-1918, when Switzerland's status of armed neutrality placed her National Militia on a footing somewhat resembling that of a regular army. Next in military efficiency are the most recent products of the active field force who have received their initial training during the past few years of international suspicion and military renaissance.

Various aspects of the training are discussed briefly. The reader is especially struck with the short period, two days at most, necessary for obtaining a 100% requalification on the rifle range and with the ability of these troops to perform difficult marches in mountainous terrain under unfavorable weather conditions. The record speaks highly for the patriotism, intelligence, and physical fitness of Swiss manhood and for the professional attainments of officers and noncommissioned officers.

HEADING TOWARDS PARITY IN THE AIR.
[Vers l'équilibre aérien.]

Review of an article by General Armengaud in the French "Revue des Deux Mondes."

Germany, by the rapid creation of an overwhelming air force, obtained initial surprise effect in the diplomatic maneuvers preceding the dismemberment of Czechoslovakia. The suddenly revealed threat of a mass attack through the air was sufficient to enable the Reich to obtain its objective without combat. But General Armengaud believes that parity in this field is so easily regained that Britain and France need feel no great apprehension from a future threat of the same kind.

The matériel now being placed in service by the two democracies is the equal or the superior of that possessed by the totalitarian powers.

In the final analysis, however, trained personnel forms the most important element in the readiness of an air force for combat. Planes in serviceable condition may be kept in operation for considerable periods by relays of crews, thus giving to a nation strong in trained reserves, an actual preponderance in the air over an adversary deficient in this respect. Britain and particularly France have air forces of long experience while Germany and Italy, having expanded their aviation arm so rapidly, cannot press their numerical superiority with any great expectation of success.

In none of the four countries does serious military thought believe that a war can be won in the air. The air forces contribute enormously to the success of the terrestrial arms but, after a certain limit is reached, no amount of aerial superiority will avail if the army and navy confront invincible resistance.

COMBAT
[Du combat.. General Camon, French Army

Originally published in "La France Militaire," 29 May 1939.

The theory is advanced that war has become so complicated that, with due regard for the essential knowledge common to both fields, the two phases of war, strategy and battle, call for general officers specialized in one or the other phase. The battle leader requires in particular an intimate knowledge of the capabilities of the rifles, machine guns, tanks, artillery, and airplanes under his command and of the methods of employing them most effectively.

Nearly a century and a half ago, Napoleon recognized and regularly practiced the specialization of general officers. Murat, Ney, and Manton were, under competent high command, excellent leaders of assault troops. As supreme commanders in secondary theaters of operations, however, Napoleon picked Masséna, Soult, and Suchet, all men who had shown special capacity as strategists. When circumstances forced the Emperor to entrust Murat and Ney with somewhat independent missions the results were disastrous.

General Camon regrets that instruction of troops and administration monopolize the time of French officers. A greater dependence on noncommissioned officers as instructors would develop their capabilities and self-

* "Normalization" is not defined but it is believed to include measures for guiding manufacturers and buyers along lines leading to mutually advantageous simplication.

confidence and would permit officers to gain a larger measure of instruction in combat, that is, cooperation of the combined arms. The author further proposes that, in addition to the service journals of the separate arms as now subsidized by the War Ministry, a General Military Review be created to afford study of the tactics and technique of the combined arms.

FORTRESSES, STRONG AND WEAK.
[Places fortes et places faibles.]

Review of General Clément-Grandcourt's book by Captain Bauer

This is the story of French fortresses in the War of 1914-1918. After the Franco-Prussian War enormous sums were appropriated to fortify the frontier from the Swiss border to the English Channel. Towards 1900, a general pessimism as to the value of these fortifications established itself in the minds of both civil and military chiefs and the forts were allowed to deteriorate. This was the period when the doctrine of "l'offensive à outrance" began to animate the French war machine. On the other hand, in 1910, fortress commanders were deluged with a mass of verbose and poorly composed material relating to their combat duties, none of which tended to imbue the recipients with any feeling of confidence in their mission.

No fortress is stronger than the will of its garrison. Every means must be taken to impress upon the commander of the defense the importance of his task in the general scheme. No sacrifice is useless if it deprives the hostile main forces of a portion of their strength at the critical moment. A commander is always acutely aware of his own peril and grief, he must be on his guard lest he magnify them and fail to allow for the mental anguish which his opponent is undergoing at the same time. When doubt assails a leader, he should seek guidance in the words of Nelson who said that the last round must always be fired for that round kills the enemy - admiral.

August 1939

THE CAPTAIN
[Le capitaine.] Captain Nicolas

The Swiss Army is essentially a highly-trained militia with an active-duty period of recruit training lasting for several months and recurring annual refresher periods. Among the officer personnel there is, to a certain degree, the same conflict between the demands of civilian careers and those of military duties that exist in our own National Guard and Officers' Reserve Corps. With this parallel in mind, Captain Nicolas' article is especially interesting.

Troops are as good or as poor as their commanders. In the final analysis the efficiency of an army is proportionate to the ability of its captains, the men who are freighted with accountability and responsibility for valuable stores of arms, equipment, and animals, who direct the energies in training and in combat of a considerable group of human beings, who act as sovereign arbiters in matters of dispute between their subordinates, and who exercise broad police powers with regard to infractions of the discipline which they themselves have created. But the captain is more than the representative of constituted authority, he is the personification of the collective spirit, the "esprit de corps," of the group at whose head he stands. It is he who executes the projects of the higher command and who inspires his men to follow him even into the jaws of death.

Not all company commanders realize the full extent of these obligations. Some think only of their tactical duties, failing to understand that three-fourths of their energies will be devoted in campaign to maintaining or restoring the physical and moral well-being of their troops before and after combat. Others are appreciative only of their administrative functions and still others are blind to the broad social aspect of their position in the nation.

From all this evidence one conclusion results: to bear such heavy responsibilities outstanding men must be designated.

Men of the requisite attainments are found almost exclusively in the intellectual classes and among the executives of commerce and industry. Since they are not too numerous, the Army should lend every effort toward enrolling them and facilitating their acceptance of military obligations in addition to those of their civil occupations.

At the age of 28 to 30 years, when most of the qualified young men are ready for advancement, they are seriously engaged in establishing themselves in civil life and have assumed obligations as husbands and fathers. Military service for a period of months is an economic impossibility for all except the wealthy.

Various proposals have been made to meet the needs of the Swiss nation for a well-trained body of officers. The formation of professional cadres and the abandonment of the traditional militia system is rejected because it would definitely separate from the army the professional and industrial leaders whose experience in their own fields singularly fits them for military command. Besides, a professional army would lose the intimate association with the civil population which it enjoys at present, would impose an additional burden on the budget, and would tend towards creation of a bureaucratic spirit in the army in contradistinction to the spontaneous enthusiasm and spirit of self-sacrifice which now animates it.

Another proposal would liberate the company commander of all responsibility for training his command, calling upon him only to lead it in the field. Training would be carried on by officer-instructors specially selected and schooled for this work. Admitting that better trained troops might result, the suggestion still has many outweighing disadvantages. At best the system would fail to develop in the company commander that feeling of complete responsibility which is inseparable from exercise of command.

The development of a spirit of responsibility and initiative in the captains is an important part of the duties of higher commanders. Differences of opinion or a desire for uniformity, as in the award of punishments, should never serve the superior officer as a pretext for asserting his authority and revoking the decisions of his company commanders. Even a laudable desire of facilitating the junior's work and of organizing the efforts of a battalion should not be allowed to jeopardize the fulfillment of the essential mission. A true leader is not afraid of the mistakes of his subordinates; he holds them responsible for the general efficiency of their commands, gives them full latitude within their provinces, and then, if they are manifestly incompetent, replaces them with more capable men.

THE INFANTRY AS A FAITHFUL IMAGE OF THE NATIONAL CHARACTER.
[Les relations du peuple et de l'infanterie.] Captain Klunge

Infantry, as in centuries past, continues to be the "Queen of Battles." It alone can close with the enemy and, having seized the ground, hold it against counterattack. It must have courage, dash, and initiative; it must have physical strength and endurance and, above all, moral stamina and faith, to bear the hardship of campaign and the blows of battle. Soldiers who meet these requirements cannot be created; they can be developed but only if the nation which sends them forth from its midst is composed of men of mental, moral and physical strength. The infantry is not an élite which can be picked from the best of the citizens, it represents the mass of the people and its worth is no greater than theirs.

The Swiss, says the author, walk less and less. Sports, it is true, are popular, but judging by the number of stragglers among the newer recruits, the length of time necessary to harden recruits for normal marching, and the throngs of blistered feet that besiege the medical tent at the end of the day, sports do not develop the endurance necessary to equal the performances of former times. Besides modern life encourages, necessitates even, a dabbling in everything without mastery of anything in particular and discourages patient application over a period of time.

Passing from the physical to the moral, we see a perceptible levelling process in which the individual gradually disappears in the mass and the mob decrees any deviation from its own mediocre standards. Authority is held in contempt and such leaders as there are fear to make demands upon their followers.

To meet these unfortunate tendencies, Captain Klunge makes a triple proposal:

1. That the youth of the country receive some preparation for military service.

2. That the officers of higher grade make greater demands upon their juniors, spurring them to active leadership.

3. That all infantry officers learn to understand the character of the troops they command, their qualities and their defects, so as to know how much to demand from them without, on the other hand, driving them to the point of exhaustion or discouragement.

This article is especially interesting to read in comparison with that of Lieutenant Bovet in the July issue. The latter paints a somewhat rosier picture of the present value of the Landsturm.

ANTITANK BARRIERS AND DEFENSE
[Barrages et défense antichars.] Captain Schenk

In the study of antitank defense, the matters of utilizing terrain intelligently and of siting available weapons advantageously have received generous attention. The passive measures of defense, including the erection of barriers and road blocks and the improvement of natural obstacles, have been frequently mentioned but, we are forced to admit, while we direct the execution of this work in our orders and indicate them with an imperious hand on our operation maps, we have only a hazy idea of the amount of time, labor and material involved in constructing obstacles of any importance and of any extent.

The first factor to consider in this study is the type of vehicle against which protection is desired. We can eliminate the very light vehicles, whose armor is vulnerable to the ordinary small-caliber weapons, and the very heavy tanks, scarce as they are and will be due to their high cost and the difficulty of their maintenance. The type of vehicle which will most affect us is the 12 to 15 ton type, familiar to all armies and possessing certain limitations as to speed, armament, and ability to negotiate difficult terrain. The amphibious tank, which is still in the experimental stage, is a future possibility whose employment must be foreseen.

Having analyzed the capabilities of the vehicles to be blocked, the next question is to determine the location of desired barriers. Reconnaissance by qualified personnel must furnish the answer; reliance upon map studies or upon reports of military or civilian personnel not experienced in the work will not suffice.

Not only is extensive reconnaissance necessary to determine the tactical siting and extent of antitank defenses but technical reconnaissance must determine the availability of materials necessary to their execution.

Having determined where antimechanized security measures are needed and possible of execution, the next question to be decided is the time of their construction. The engineers are the only troops equipped and trained to erect barriers other than simple blocks placed as a routine security measure by all troops to delay hostile combat vehicles under the fire of their own weapons. Since the engineer component of any force is relatively small, a priority for the construction of barriers must be established and this decision, too, is inseparable from the exercise of command.

Finally, the problem arises as to how the work is to be done. Engineers carry a limited amount of material which can be used to erect obstacles of prime necessity. These are usually temporary in nature, are frequently used to cover working parties engaged in construction of a more permanent nature, and must, in any case, be replaced by more solid and extensive barriers. Any obstacle, to be effective, should be covered by fire, preferably by fire from weapons capable of destroying the combat vehicle but in any case from weapons which will make it impossible for tank crews to emerge from the vehicles to dislodge the obstacles.

For single road blocks various expedients are listed in regulations. Among them the device known in the United States Army as the Ribard cylinder, made up of barbed wire stretched on a frame of steel hoops, is the ideal type, particularly when one is superimposed on a base of two others. A one-half inch steel cable stretched obliquely across a road and securely attached to trees or other supports of strength equal to that of the cable is particularly effective against armored cars at night. Farm harrows laid upside down in two contiguous rows across a road will stop vehicles equipped with pneumatic tires.

Mine fields are particularly in favor in the Swiss Army. It must not be forgotten, however, that mines in any considerable number represent an enormous amount of tonnage, that their use must be closely coordinated with the movements of friendly covering forces, and that they limit the freedom of action of a defender who may desire to pass to the offensive.

Engineer troops are particularly concerned with demolitions, felling trees in wooded country, and construction of strong, securely-anchored street barriers. Blocking of roads and trails in wooded country in particular calls for a careful coordination of the labor and equipment available to secure a barrier of the greatest depth practicable in the allotted time. Road surfaces are preferably destroyed before demolitions begin. Trees must be felled so as to obtain maximum interlocking of trunks and branches. If power saws are available, stumps from three to four feet high are left standing as additional obstacles. All barriers should, whenever practicable, be concealed from distant observation so that hostile mechanized vehicles encounter them unexpectedly and on ground where they cannot readily retreat or go around and, here again, protective fires are of great importance.

Thus far, obstacles constructed by troops in the field have engaged our attention. Another class should be mentioned in closing, that represented by the steel rails of the Maginot Line and by the concrete "stumps" of the Siegfried Line. These and others calling for large quantities of special material and for masses of labor are not to be improvised. They are a part of the permanent defensive system of the country, must be planned long in advance, and must be executed by civilian labor not available to the field forces.

STRATEGY.

[De la Stratégie.] (An article by General Camon in "La France Militaire," 23 May 1939.)

The principles of war are immutable. They were discovered by the great leaders of past centuries and will continue to guide successful operations in the future in spite of all developments in the arms placed in the hands of troops. Of these principles the outstanding one is that pertaining to the masses of means at the point where a decision is sought.

Schlieffen's plan was conceived on this principle. Moltke emasculated it by seeking to keep his left strong at the expense of his right and by sending troops badly needed on the Western Front to reinforce the army in East Prussia.

Joffre failed to observe the principle both in his initial concentration and in his dispositions for the first Battle of the Marne and lost the opportunity thereby for a truly decisive defeat of the German Army.

Ludendorff (says the author) beat the Russians in East Prussia and again in Poland by massing his strength at the decisive point. Franchet d'Espérey on the Salonikan Front, and Pilsudski in 1920 owed their success to the same principle.

Call the principles of war, if you will, simple rules of common sense, still they are violated and always with disastrous results.

September 1939

INFANTRY AND TANKS.

[L'infanterie et les chars de combat.] Captain Delay.

This article is a study of antitank defense in its psychological, as well as its tactical and technical aspects. The author finds that, while experienced troops may, as certain authorities hold, be counted upon to receive a tank attack with the same sangfroid as they would an infantry assault, the chances are strongly against our having such seasoned troops, immune to surprise, to oppose any particular operations of the sort. After four years of war, the Allied offensive at Amiens on 8 August 1918 broke through the German lines on a front of 19 miles to a depth of 7 miles with devastating effect on the 11 German divisions involved. Apparently, a mass attack of tanks, executed with the necessary surprise, leaves few survivors on the opposing side.

Psychological preparation must therefore come from a source other than battlefield experience. Training must engender in the infantryman a feeling of security when operating on terrain unsuited to tank employment.

Antitank units should have a more extensive knowledge of tank types, their armament, missions, and tactics, and the support that they receive from artillery, aviation and other tanks equipped with field guns.

As a final step in the psychological preparation of the infantryman, he should witness a demonstration in which the capabilities and limitations of latest tank models would be fully shown.

Commanders of the various echelons must, to a greater or less degree, make a study of the tactics and technical capabilities of modern mechanized units. Two publications are especially recommended as sources for this study. The first, Eimannsberger's "Der Kampfwagenkrieg" [Tank Warfare], examines three great offensives of 1914-1918, Cambrai, Soissons and Amiens, treats minutely the possibilities of antitank defense and risks itself finally in the domain of prophecy. The second of the two books, Major von Schell's "Kampf gegen Panzerwagen" [Antitank operations], is a tactical study based on the antitank organization of the German Army. A brief summary of his premises and conclusions follows.

A German division includes 54 infantry cannon: each of the three infantry regiments has 9 and the division commander has under his immediate control three companies of 9 guns each.

Major von Schell examines the problem of antitank defense of this division under various conditions.

(1) On the march he posts the antitank guns at or near the head of the column or columns. The regimental guns are distributed by section while the divisional companies are held under the control of the division commander to be committed to the protection of the flanks as warranted by developments. It is expected that only light, reconnaissance types of mechanized units will be encountered and that their mission will not require combat. Antitank measures should include the selection of routes on terrain unfavorable to mechanized attack. Since infantry cannon at the head of the column should be constantly ready to open fire, a question which must be decided in every situation is that of displacing them by bounds or of having them march with the other elements. Other considerations are the possibilities of flank attack and the vulnerability of the artillery; lateral routes may have to be blocked and mined and denied to the enemy by fire.

(2) During the approach the division is extended laterally in accordance with a plan which varies according to the situation. No one scheme of antitank defense is applicable to all conditions. Dispersion of the command renders it less vulnerable to mechanized attack and it is probable that the enemy will not risk his tanks in mass during this obscure phase of operations. The antitank guns will concentrate their attention on critical points along routes of approach and on vital points of the terrain whose seizure by friendly advance elements is essential to the commander's plan.

(3) In the defense his division must be most on its guard against mass tank attack. In addition to observation for his artillery and fields of fire for his automatic weapons, the commander must seek terrain unfavorable to tank employment. Natural obstacles must be improved and mine fields established so as to canalize tank attacks within the narrowest possible limits. Antitank weapons are concentrated at the points of canalization and are reinforced when necessary with field pieces. The assignment of antitank guns to elements in front of the main line of resistance must be made in full cognizance of the fact that, while they may be the sole means of barring a route of advance, they may be sacrificed by such employment. Within the position, antitank guns must be ready from the outset to open fire the speed with which assaulting tanks can go into action makes it impracticable to hold guns in reserve, even when motorized, and expect them to occupy position in time to be effective.

(4) In the attack there is no need to fear mass employment of the defender's tanks until his position has been entered and the time is ripe for counterattack. To resist him successfully at this stage, the attacker must be in possession of ground favorable to antitank defense or be amply equipped with the weapons necessary to combat him. A possibility which should not be overlooked is that of encountering tanks in ambush, used as mobile pillboxes.

(5) In the pursuit we may expect to encounter few hostile tanks. These will be committed only against limited objectives for the purpose of extricating some hard-pressed element.

(6) In the retreat, on the other hand, every measure must be taken to parry blows by mechanized forces. A properly-planned retreat will make maximum use of the terrain, of demolitions, and of mines to restrict mechanized pursuit. Successive positions previously stocked with ammunition will be prepared for antitank guns. It should be remembered that tanks will not halt to engage in a fire fight but will drive straight towards a hostile weapon in action to crush it to earth.

In the light of Major von Schell's studies, Captain Delay finds that the Swiss division, with two infantry cannon for each of its nine battalions and a divisional motorized company of nine guns is insufficiently equipped for antimechanized defense. He would add to each regiment a motorized company of nine antitank guns, bringing the total within the division to 39.

Captain Delay also recommends development of light, portable tank mines to accompany automatic rifles and machine guns in their carts. They would be emplaced by gun crews in addition to the mine fields laid by engineers, which, while effective, require an enormous number of mines and considerable time for installation. Provision of light mines would obviate the waiting of great quantities of grenades which are entirely unsuited to defense against tanks.

DEFENSE OF A VILLAGE BY A REINFORCED COMPANY.

Défense d'un village par une compagnie renforcée.] Captain Verrey.

For a number of reasons, the Swiss Army, like our own, conducts its maneuvers in regions which are, for the most part, uninhabited. This leaves a gap in the training of company and platoon commanders who, in opposing an invasion, will be expected to turn to good account the natural defensive strength of villages so sited that they bar the hostile advance. Success in such an enterprise calls for a high degree of professional knowledge to organize the position and for eminent qualities of aggressive leadership to carry the defense to a successful conclusion.

To illustrate the principles involved, we are given a theoretical situation involving the defense of the village of Morrens by a reinforced company of a rear guard battalion. The mission of the battalion is to cover the retirement of its regiment to a new defensive position to the east and to delay the enemy's advance. Two other companies of the battalion have received delaying missions farther to the west. Our company is to cover the withdrawal of the remainder of the battalion and to defend the village of Morrens until further orders, thus covering the occupation of the new regimental position.

The company commander is well versed in the tactics of the attack of defended villages. He knows that the enemy will launch both a frontal and an enveloping attack, each supported by the fire of artillery and infantry heavy weapons and accompanied by tanks and accompanying guns.

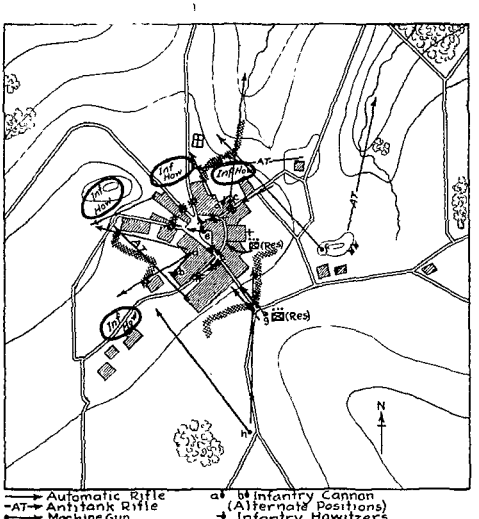
The village of Morrens is well chosen to bar the enemy's advance and to require him to attack in force. It is a road center between two rivers, one

less than a mile to the north, the other less than a mile to the south. It is covered from distant terrestrial observation and from fire of flat trajectory weapons by high ground to the west which can be effectively covered by fire. Its masonry walls and its cellars furnish concealment and shelter and it is a natural obstacle to mechanized attack. A wealth of materials for road blocks and for defensive works is at hand. The sole apparent disadvantage is that powder guns as well as chemical agents cannot be readily dispelled within its confining walls.

The company commander has limited means at his disposal: three rifle platoons, nine automatic rifles, three antitank rifles, six machine guns, one infantry cannon, and two infantry howitzers. His knowledge of the principles involved makes him realize that he must bar and defend the exits to the village, enfilade its outer walls and the approaches, organize the inner defenses in depth, and maintain a mobile reserve close at hand. He must strengthen the defense with long range weapons beyond the village, sited so as to deliver flanking fire against the hostile assault elements. He must also have a mobile reserve outside the village to counterattack the enemy when he has penetrated to the interior and can no longer be supported by his artillery.

A solution to the problem of organization is shown in part on the accompanying sketch. Road blocks, wire entanglements, demolitions and antitank mine fields are used to the greatest extent possible. They are defended by fire from automatic and other weapons and by riflemen amply supplied with clusters of grenades and inflammable substances. The heavy weapons are protected by riflemen. One rifle platoon furnishes the garrison for the western combat posts. A second platoon provides depth to the defense within the village and furnishes a mobile reserve prepared to move to north or south by the defiladed street passing before the church. The third platoon, beyond the walls, provides flanking fires along the village limits and a mobile reserve for counterattack. The infantry howitzers are located to the east of the village and prepare fires as shown on the main avenues of approach.

To complete the picture we must imagine all of the numerous activities which the company commander must set in motion, provisions for security, for supply and evacuation, for utilization of his officers and noncommissioned officers at the points where their leadership will serve to the greatest advantage.



COMMENTS ON THE PRESENT WAR.
[Commentaires sur la guerre actuelle.]

The great aerial offensives which, according to prophets of the past few years, were to characterize the opening phase of a new war, have failed to materialize. Not only have the great cities and centers of communication of the western belligerents remained practically free from bombardment, but the various armies have also been able to complete their concentrations without interference.

Another false prophecy was that which held that hostilities would open without a declaration of war after a brief period of international tension. In the present situation, diplomatic maneuvers had scarcely begun when hostilities commenced; diplomacy continued to operate while the armed forces joined combat. It seems that the diplomats and the soldiers are simultaneously engaged in a joint mission.

The operations in Poland are completely different from those on the Franco-German frontier. In Poland the "lightning war" of large mechanized forces came to full fruition. Against a foe ill-prepared to counter its wide and swift maneuvers and favored by weather conditions on terrain which rain could have rendered utterly impossible, the new terrestrial arm lived up to highest expectations, paralyzing Polish command agencies and neutralizing or destroying the defender's reserves.

On the western front the picture is altogether different. Two strong defensive systems face each other, neither of which is suited to serve as an offensive base. Such action must of necessity consist of operations with limited objectives. Surprise in any great degree is impossible and the French attack has been merely a methodical application of the principles formulated in recent regulations, brief artillery preparations and use of tanks in close cooperation with the infantry, whose essential missions are to occupy territory gained by the tanks and to reduce local resistance.

The Swiss nation should not attempt to find a complete answer to its defense problem on either the eastern or the western front. Switzerland has no impregnable system of fortifications on its frontiers; neither is its terrain as favorable to maneuver as Poland. The operations on both fronts will have their lessons for the Swiss but the ultimate solution will necessarily be based on the situation in their own land.

TRIAL BY BATTLE.
[Faire la guerre.] (An article by Charles Kuntz in "La France Militaire," 20-21 August 1939)

The 1939 Regulations are undergoing the final test, trial by battle. Since regulations are so often superficial and ignore the essential principles of military success, it is appropriate to review some of those principles stripped of the artificial trappings with which peace-time practice has decked them.

A misinterpretation of the lessons of 1914-1918 has led many people to believe that holding on is the element of success in war. Nothing would be farther from the truth.

The first essential is to find the gateway on which to concentrate force and, lest there be any mistake, this must not be confused with trying to batter down a stone wall. Then the means must be found for forcing the gate. The necessity of holding on while these measures are being carried to conclusion is undeniable but holding on by itself is futile.

As war becomes more and more technical, the military career becomes specialized to a greater degree than ever before. The exalted masses of Valmy have no place on the battlefield of today. But war is not a trade with a daily routine and the military leader must guard against the temptation to reduce his labors to a well-defined system in which details become more important than principles and the careful maintenance of mental card indexes blind him to changing circumstances. In the service schools in particular the tendency is to impose doctrine to the neglect of logical thinking.

In war a blow must be struck. The adversary is unknown, he appears from an unexpected direction and his weapons are unpredictable. No matter. The blow must be struck and struck before the adversary can deliver a better one. Is war then just a brawl in which the inspiration of the moment is all that counts and judgment and planning are of no avail?

No, the answer once again is simplicity, adherence to three, at most four, essential principles. To strive for more is to risk failure in overcomplication. The first is to arrange to meet the enemy on ground of your own choice. Then, draw up the broad lines of action according to the latest and best verified information. If there is a complete dearth of information, it must be sought before commitment to any definite line of action. Third comes a study of one's own strength and capabilities as opposed to weak points in the hostile dispositions; this should reveal the place where and the means with which a decisive blow can be struck. It must, however, be decisive and not a mere push. Finally, everything is thrown into this one great effort with a will to win which imbues the troops from the commander to the last recruit.

Since 1914 sight has been lost of a very human and, consequently, a very necessary element in the creation of an army, the personal acquaintance of men and leaders and the mutual confidence that springs therefrom. At the first battle of the Marne, a beaten army turned as a man to drive back the invader because the soldiers were called upon by leaders, from corporals to generals, who had led them long before. Today the officers pass unceasingly from post to post; only the noncommissioned officers stay to give some permanence to organization. This lack of continuity is to be regretted.

In summary, it can be said that leadership in war consists in so studying and planning that surprise by the enemy is eliminated as a possibility. For every contingency a course of action is thought out and when the contingency arises the necessary action is put energetically in effect.

WARTIME TRAINING.
[L'instruction en temps de guerre.] (Abstract in "La France Militaire," 25 July 1939, of a recent article in "Militar-Wochenblatt.")

In the spring of 1915, German recruits were still being taught mass maneuvers exclusively by instructors who had had no experience on the battlefield, and yet men familiar with the new practices being developed in France and Belgium were available as recruit instructors. The article wishes to avoid a repetition of these mistakes and proposes means of rapidly putting lessons learned on future battlefields into recruit curricula.

MILITARY POWER OF SOVIET RUSSIA.
[La puissance militaire de l'U.R.S.S.] (From "La France Militaire," 4 August 1939.)

Statistics and other information regarding Russia's military, naval, and air power. The sources of the information are obscure and the editors make no claim as to authenticity.

ROYAL ENGINEERS JOURNAL (Great Britain)

December 1939

MINOR FRENCH FORTRESSES AND BARRIER FORTS IN AUGUST-SEPTEMBER, 1914 Brigadier General Edmonds

WISSEN UND WEHR (Germany)

BY MAJOR WM H SPEIDEL, Infantry

June 1939

MOLTKE IN THE BATTLE OF NISIB ONE HUNDRED YEARS AGO.
[Moltke vor hundert Jahren in der Schlacht bei Nisib] Eberhard Kessel

One hundred years ago, 24 June 1839, the career of the great Field Marshal General von Moltke began with the defeat of the Turkish Army, with which he was serving as a military advisor. The Turkish Army made the same mistakes that later brought defeat to the French in 1870 at Metz and Sedan. At Nisib, Moltke had had nothing but theory to guide him, here he received his first great lesson in war.

SUNTSU, THE CHINESE WAR PHILOSOPHER OF THE PRE-CHRISTIAN ERA.
Sun Tsi, der chinesische Kriegsphilosoph der vorschriftlichen Zeit.] Mizuyo Ashiya

This is a digest of "The Book of War," the military classic of the East, reviewed on page 58, C & G S S Military Review, December 1939

THE INFLUENCE OF THE MEANS OF TRANSPORTATION ON THE CONDUCT OF THE WAR IN CHINA
[Der Einflusz der Verkehrsmittel auf die Kriegfuhrung in China.] Major Welsch

The transportation problems which have influenced the conduct of the war in China are covered under the following captions: Shipping and mastery of the seas; Influence of politics on land transport, Railroads and strategic plans, Chinese railway system; Air lines. Inland waterways and seas; Other means of transport, Japanese control of the seas, Strategic and tactical exploitation of transport facilities by the Japanese; Mechanized columns, Offensive in North China, River crossings, Battle of Shanghai; Battle of Suchow and the Lunghai Railway, Operations on the Yangtze; International complications, Japanese lines of communication, War doctrines, Chinese destructive operations; Protection of Chinese transport facilities; Guerrilla warfare, Japanese measures to isolate China; Central China's contact with the outer world

July 1939

FRIEDRICH VON COCHENHAUSEN

This is a short biographical sketch of the German military leader, who in 1938 was appointed General of Aviation. In 1936 he had been recalled to active service and appointed Lieutenant General of Aviation and detailed as a tactical instructor at the Air Academy

A DECISIVE BATTLE OR CRUISER WARFARE.
[Entscheidungsschlacht oder Kreuzerkrieg?] Admiral Gladisch

Certain definite objectives, other than the matter of coast defense, are of primary importance to a navy, when the state is forced to obtain concessions of strategic importance in the sea lanes, or if a belligerent desires to obtain decisive advantages through the exclusive use of the ocean highways. It is then that the battle for the use of the sea lanes becomes the purpose and mission of naval warfare.

With this objective in view, the strategic conduct of a naval war depends on two fundamental doctrines. One, which originated with Admiral Mahan (U. S. N.), has for its mission the annihilation of the hostile fleet. The other school of thought believes in blocking the supply channels by a direct attack against the enemy's merchant vessels. This latter method is called cruiser warfare. In its conduct, battle against warships must be avoided, unless the attack against the sea commerce of the enemy cannot be carried out otherwise. Decisive duels between fleets must be avoided.

THE WAR OF QUICK AND DECISIVE CONCLUSION.
[Der Krieg der schnellen Entscheidung.] Major General v.Tempelhoff

The author discusses the attitudes of Russia, France, the United States and England toward fighting a prolonged war. Several historical examples are quoted. He concludes with the remark: "When the great powers of Europe, armed as never before, become opposed in battle, it will be impossible to defeat one or the other in one or two campaigns."

THOUGHTS ON AERIAL DEFENSE IN THE WARS SUBSEQUENT TO 1918.
[Gedanken über den Luftschutz in den Kriegen seit 1918] General Grimme

General Grimme discusses his subject from the viewpoint of the wars in Ethiopia, Spain and the Far East, and presents some interesting figures.

RECOGNIZED OBJECTIVES IN AERIAL WARFARE
[Erlaubte Angriffsziele im Luftkrieg] Ernst Schmitz and Count v.Stauffenberg

The authors discuss the ethics involved in the selection of aerial objectives and the effect of applying international rules to the war in the air. They recognize two fundamental principles: (1) Aerial attacks must be limited to purely military objectives; (2) The deliberate attack against the civil population is inadmissible.

ON THE PROBLEM OF CULTURE AND WAR.
[Zum Problem Kultur und Krieg] Karl Linnebach

THE INTERNATIONAL LABOR MOVEMENTS AND ARMAMENTS
[Die internationale Arbeiterbewegung und der Wehrgedanke.] Dr. Osthold

August 1939

THE CAUSES OF THE WARS OF 1864, 1866 AND 1870.
[Über Kriegsursachen 1864, 1866 und 1870.] Lieut Colonel v Collenberg

SOVIET WAR EXPERIENCES IN SPAIN.
[Sowjetrussische Kriegserfahrungen in Spanien] Anonymous

This article covers. The infantry attack; machine guns in the defense, night attacks; the attack against, and the defense of, cities and towns; antitank defense, landing fields; the political commissar.

THE MILITARY SITUATION IN GERMAN DANZIG
[Das Kriegswesen im deutschen Danzig.] Dr. Wendt

MILITARY AND POLITICAL OBSERVATIONS BASED ON THE CENSUS OF 17 MAY 1939 AND THE DEVELOPMENT OF THE POPULATION.
[Wehrpolitische Bemerkungen zur Volkszählung vom 17. Mai 1939 und zur Bevölkerungsentwicklung] Dr. Flugge

WHAT WAS THE SIGNIFICANCE OF THE ENTENTE'S OPERATIONS AT SALONIKA WITH RESPECT TO THE PROGRESS AND OUTCOME OF THE WORLD WAR?
[Welche Bedeutung kommt dem Saloniki-Unternehmen der Entente für den Verlauf und Ausgang des Weltkrieges zu?] Lieutenant Glahn

FOREIGN AFFAIRS

January 1940

FROM BREST-LITOVSK TO BREST-LITOVSK. J. W. Wheeler-Bennett
HOW MUCH CAN AND WILL RUSSIA AID GERMANY? B. C. Hopper
BLITZKRIEG. H. J. Reilly
ON THE CHINESE FINANCIAL FRONT. A. N. Young
THE WAR IN THE AIR: FIRST PHASE. J. M. Spaight

Readers' Guide and Subject Index

A

Aerial Warfare
Air Arm
Ammunition
Animals
Antiaircraft Artillery
Antiaircraft Defense
Antigas
Antitank
Applicatory Exercises
Armaments
Armies (See country)
 Command and Staff
 Mobilization
 Organization and Equipment
 Training
Armored Cars
Art of War
 Strategy
Artillery (Other Arms similarly)
 Command and Staff
 Organization and Equipment
 Training
 Tactics
Attack

B

Breakthrough Operations

C

Camouflage
Cavalry
Chemical Warfare Service
Civilian Conservation Corps
Coast Artillery
Command, Staff and Logistics
Counterattack

D

Defiles
Delaying Action
Disarmament

E

Engineers
Envelopment
Equitation

F

Fire Superiority
Flank Operations
Formations, Battle
Fortifications
France, Army of
Future Warfare

G

Gas and Smoke (Use of)
Geography (Military)
Germany (Army of)
Great Britain (Army of)

H

History (General)

I

Infantry
Intelligence (Military)
International Relations
Italy (Army of)

J

Japan (Army of)
Joint Operations

K

L

Large Units, Organization and Tactical Functions (Army, Corps and Division)
Law, Military and International
Leadership
Liaison

M

Machine Guns
Maneuvers
Map Problems
Marches
Marine Corps
Mechanization
Medical Service
Meeting Engagement
Mining
Mobile Warfare
Mobility
Mobilization
Motorization

N

National Defense
Naval Warfare
Navies (See country)
Night Operations

O

Obstacles
Ordnance Service
Organization
Overseas Expeditions

P

Penetration
Position Warfare
Principles of War
Pursuit

Q

Quartermaster Service

R

Raids
Reconnaissance
Riots
River Crossings
Routes
 Communications

S

Security
Signal Service
Supply

T

Tactics
 Operations
 Evolution of Tactics
 General Topics
 Defensive Combat
 Offensive Combat
 Special Warfare
 Troop Movements
Tanks
Technology
Terrain
Topography
 Surveying
Transportation
Turning Movements

U

United States (Army of)

V

Veterinary Service

W

War
 Peace
Wars (Ancient, Medieval, Modern)
 World War
 G — Socio-Economic History
 E — General Military History
 F — Zone of Interior
 G — Arms and Services
 H — Military Conduct of the War in the Field
 J — Campaigns and Battles
 L — Naval History
Weapons
Withdrawal

X

Y

Z

LIST OF PERIODICALS INDEXED AND KEY TO ABBREVIATIONS

A Med Bul = Army Medical Bulletin
A Ord = Army Ordnance
A Quar = Army Quarterly (Great Britain)
Bul Belge Mil = Bulletin Belge des Sciences Militaires (Belgium)
Cav Jour = Cavalry Journal
Chem War Bul = Chemical Warfare Bulletin
CA Jour = Coast Artillery Journal
FA Jour = Field Artillery Journal
Ftg Forc = Fighting Forces (Great Britain)
La France Mil = La France Militaire (France)
Inf Jour = Infantry Journal
Jour Amer Mil Inst = Journal of the American Military Institute
Jour RAMC = Journal of the Royal Army Medical Corps (Great Britain)
Jour RUSI = Journal of the Royal United Service Institution (Great Britain)
Kras = Krasnaya Zvyezda (Russia)
MC Gaz = Marine Corps Gazette
Mil Mitt = Militarwissenschaftliche Mitteilungen (Austria)
Mil Rund = Militarwissenschaftliche Rundschau (Germany)
Mil-Woch = Militar-Wochenblatt (Germany)
Mil Eng = Military Engineer
Mil Surg = Military Surgeon
Nav Inst Proc = Naval Institute Proceedings
Panzer = Panzertruppe (Germany)
Pion = Pioniere (Germany)
QM Rev = Quartermaster Review
Ras Cul Mil = Rassegna di Cultura Militare (Italy)
Rv d'Art = Revue d'Artillerie (France)
Rv d'Inf = Revue d'Infanterie (France)
Rv Mil Suisse = Revue Militaire Suisse (Switzerland)
Roy Eng Jour = Royal Engineers Journal (Great Britain)
Ws & Wr = Wissen und Wehr (Germany)
For Aff = Foreign Affairs

Jan = January
Feb = February
Mar = March
Apr = April
May = May
Jun = June
Jul = July
Aug = August
Sep = September
Oct = October
Nov = November
Dec = December

A

AERIAL WARFARE

The war in the air. (Ftg Fore — Dec 1939)
National defense and antiaircraft defense. (CA Jour — Jan-Feb 1940)
The war in the air; First phase. (For Aff — Jan 1940)
Cooperation of tanks and aviation. (La France Mil — 7 Oct 1939)
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Heading towards parity in the air. (Rv Mil Suisse — Jul 1939)
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Command and Staff

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Auxiliary Military Forces

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Command and Staff

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Corps

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G — Arms and Services

AIR ARM

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German tank tactics. (Bul Belge Mil Jul 1939)

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J — Campaigns and Battles

EUROPEAN AREA BALKAN THEATER

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Changeless war. Modern methods have not altered the fundamentals. (A Ord — Jan-Feb 1940)

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Y

YUGOSLAVIA ARMY OF)

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* * * * * * *

Movement is the rule of strategy.—Foch

Triangular Infantry Division

Definitions

1. A "Combat Team" consists of an infantry regiment and a field artillery gun battalion. A field artillery gun battalion is habitually teamed with the same infantry regiment.

2. A "March Group" is a column consisting of a combat team, with attached units if any. It is commanded by the infantry regimental commander.

"Combat Teams" and "March Groups" are designated by the number of the infantry regiment.

3. "Shuttling"—A method of movement in which more than one trip is required. A "Shuttle" is that portion of a march group which is moved in one of the trips.

* * * * * * *

Popular knowledge of history, I believe, is largely based on information derived from school text-books, and unfortunately these sources often tell only a portion of the truth with regard to our war experiences. Historians have been inclined to record the victories and gloss over the mistakes and wasteful sacrifices. Cause and effect have been, to an important extent, ignored. Few Americans learn that we enrolled nearly 400,000 men in the Revolutionary War to defeat an enemy that numbered less than 45,000, or that we employed half a million in 1812 against an opponent whose strength never exceeded 16,000 at any one place, and fewer still have learned why these overwhelming numbers were so ineffective. The War between the States pointed numerous lessons for our future protection, yet seldom has a nation entered a war so completely unprepared, and yet so boastfully, as did the United States in 1898. Veterans of the World War often seem to overlook the fact that almost a year and a half elapsed after the declaration of war before we could bring a field army into being and even then its weapons, ammunition and other material were provided by our Allies. And many of them seem unaware of the fact that the partially trained state of our troops proved a costly and tragic business despite the eventual success. —General George C. Marshall, Chief of Staff of the United States Army.

TANKS

Basic Doctrine

(1) Tanks are not committed to action until a well-defined objective has been located. Their piecemeal employment is without purpose. In principle, the mass of tanks is engaged on that part of the front where the decisive attack is to be made, provided the terrain is suitable. The tank objective coincides with that of the supported troops, with whose action their employment must be coordinated. The employment of tanks in no way lessens the need for strong supporting fire of artillery and heavy infantry weapons.

(2) Normally, tanks do not operate beyond effective fire support of the infantry and other supporting arms. Tanks are, therefore, given successive objectives which they attack. When hostile resistance is subdued, they reorganize and push on to the next objective; or hold themselves in readiness, as directed by the commander.

(3) The conception of employing tanks in the sense of an independent combat group operating beyond the range of its infantry and supporting artillery is rejected. Tanks should not, however, be tied too closely to foot troops. Where this obtains, they sacrifice their mobility and become a vulnerable target for antimechanized weapons. Tanks, therefore, attack in several echelons disposed in depth. The leading echelon is normally composed of medium tanks, if available.

(4) In the attack, the leading echelon advances closely behind the supporting fire of the artillery and heavy infantry weapons. These tanks with the support of other weapons, have the mission of dominating the antimechanized guns. The second echelon, closely followed by the foot troops, advances with the mission of dominating the enemy's machine guns. These are the accompanying tanks that break into the hostile position with the infantry.

(5) In certain situations it may be advisable to delay the entry of the tanks into action until a later phase of the attack. This may be advisable because of the character of the terrain, or to supplement the diminishing fire of the artillery during the assault, or to replace artillery support when batteries are displacing forward.

(6) The general distribution of tanks in combat and the general plan for their employment are determined by the higher commander. The subsequent action of the tanks is controlled by the commander of the tactical grouping in whose zone of action they operate, or by the infantry regimental or battalion commanders to whose units tanks are attached. The higher commander is responsible for the proper coordination of the action of the supporting arms under his control.

(7) The mission of the tanks is determined by their power to contribute to the execution of the infantry mission. The infantry takes advantage of the tank action to advance promptly and occupy each successive intermediate objective. The tanks are supported by the use of artillery, heavy infantry weapons, smoke, and combat aviation for neutralizing hostile antimechanized weapons and artillery which may threaten the tank advance. Observation aviation will cooperate in detection of tank obstacles. Whenever the necessity for their services can be foreseen, engineer troops may be attached to tank units for assisting their advance.



BACK ROW 1st Lt A L Mills, Cav; Capt E Swift, Cav; 1st Lt N P Phister, Inf; Maj. J. F. Morrison, Inf; 1st Lt. T. H. Slavens, Cav; Capt. J. S Rogers, Inf., Secretary; 1st Lt. C H Muir, Inf; 1st Lt A. J. Hammond, Cav; Capt J. T. Dickman, Cav.

FRONT ROW: Capt A. L. Wagner, Inf, 1st Lt W. D Beach, Cav; Maj. J. T. Haskell, Inf; Col. H S. Hawkins, Inf., Commandant; Maj. H. McElderry, M C , Maj A R Chaffee, Cav; Capt W B. Reynolds, Inf

COMMANDANT AND FACULTY, U S. INFANTRY AND CAVALRY SCHOOL, 1897

(First photograph of faculty on record at this School)